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The Call of the Hen

By WALTER HOGAN

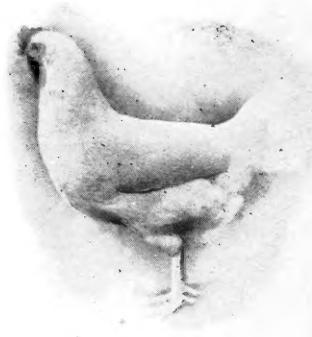
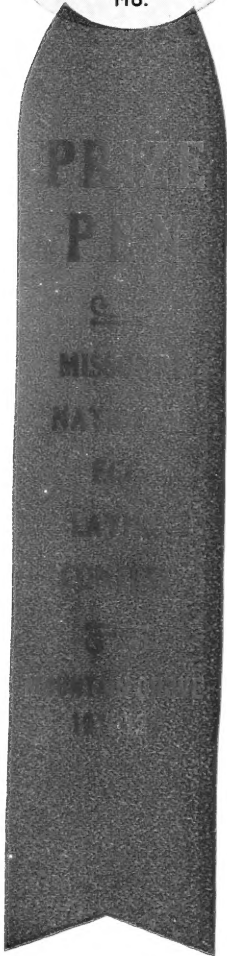


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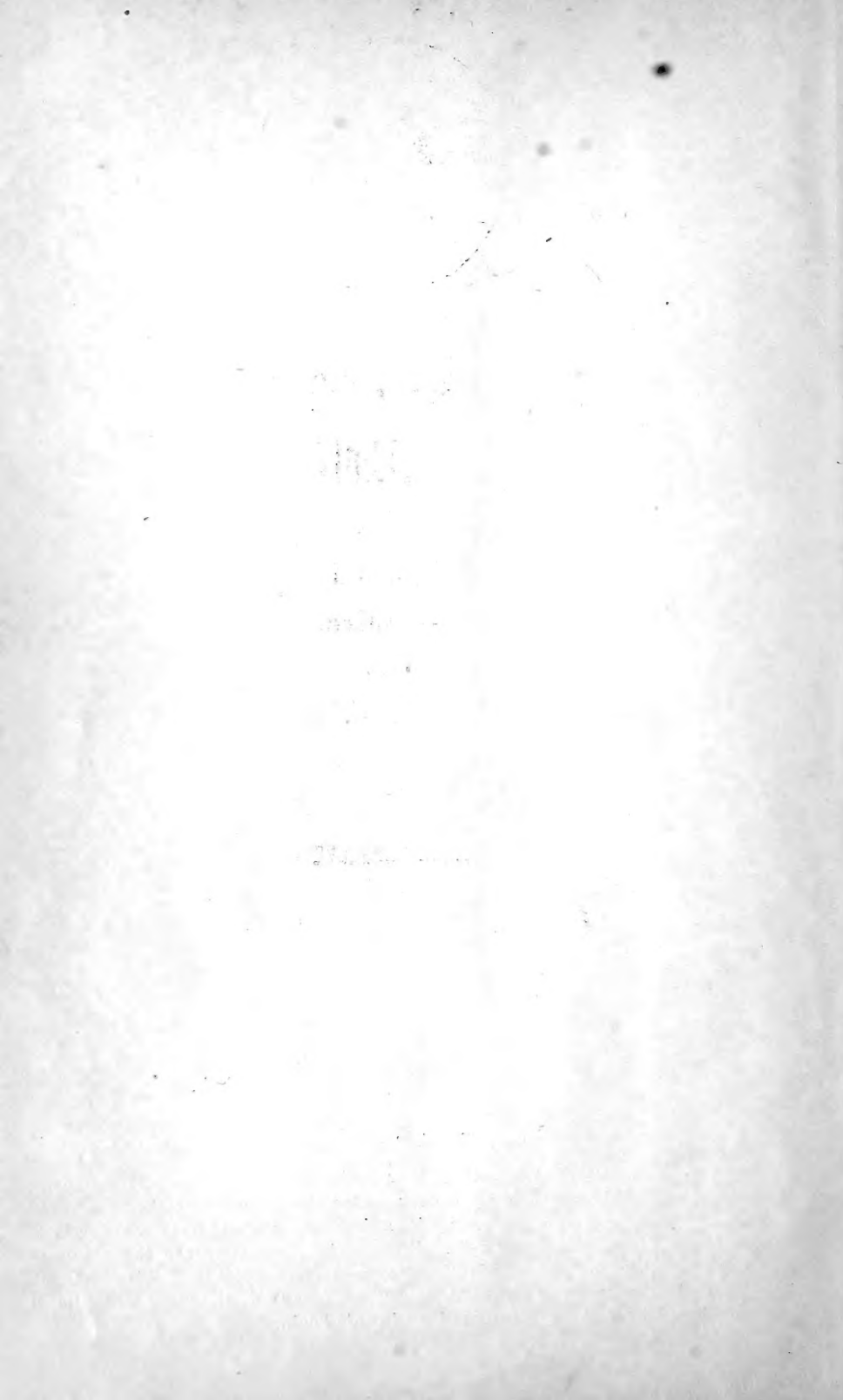




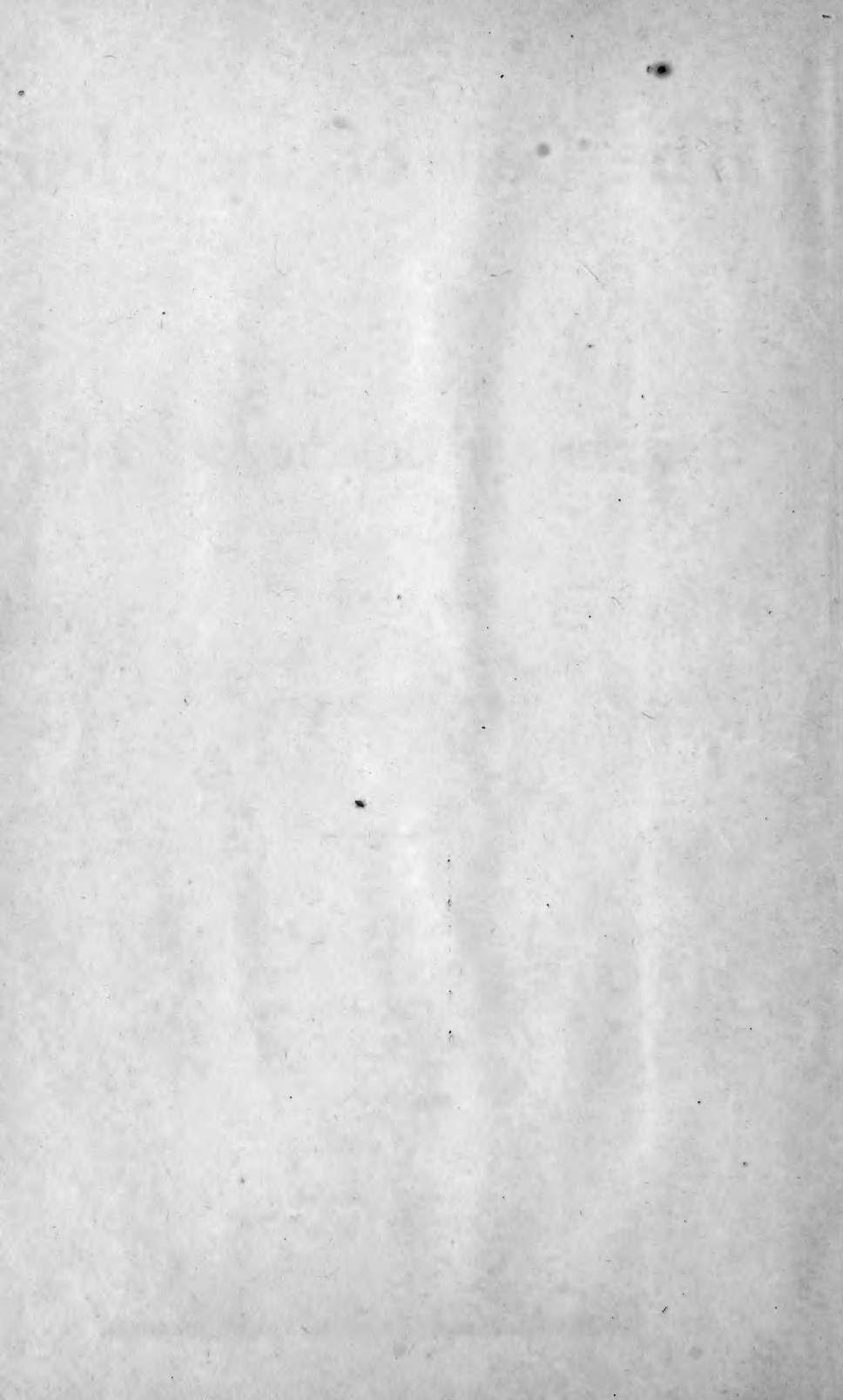


Photographed by request Chamber of Commerce Petaluma, California.

These hens weighed less than four pounds each, and laid 131 pounds, 2 oz. of eggs. They won the prize for laying the greatest weight in eggs, in the national egg laying contest. Each hen's eggs would have sold for \$5.40 on the Petaluma market if reduced to No. 1 eggs. They are the result of five years breeding by the author from common Petaluma Single Comb White Leghorns. It is possible for the reader to do the same with almost any breed by following instructions in this book.







The Call of the Hen

Or the Science of the

Selection and Breeding of Poultry

BY

WALTER HOGAN

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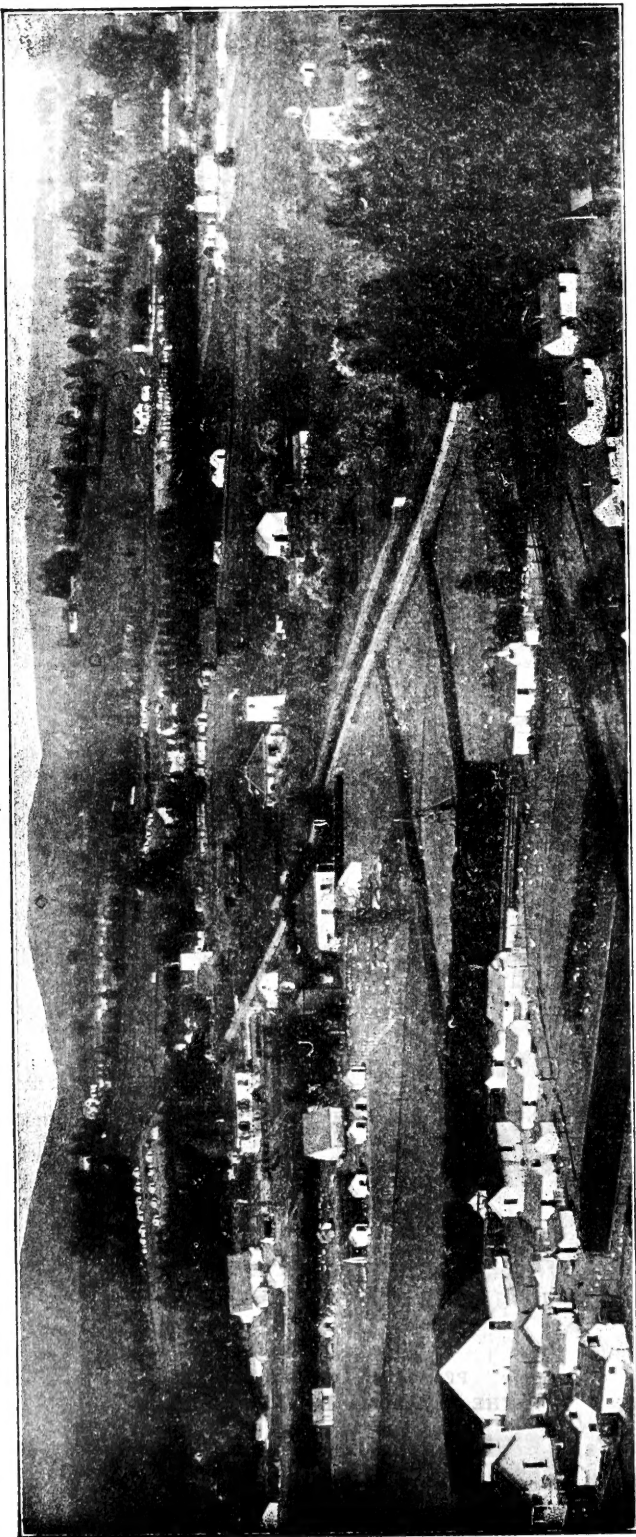
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PETALUMA, CALIFORNIA:
THE PETALUMA DAILY COURIER

1913

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Walter Hogan*



The Homes of One Hundred Thousand White Leghorn Hens. A Typical Petaluma Poultry Landscape. In the Vicinity of
Petaluma there are Over 1,000,000 Laying Hens.

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Dedicated
To the Poultrymen .
Who, Like the Author,
Do Not Know It All

FOREWORD

The writer's introduction into poultry keeping was in the city of Boston, Massachusetts, in the autumn of 1857. By the spring of '68 I had a flock of nearly 400 birds, among them a lot of the best Single Comb White Leghorns that I could find. I went in person to New York City to get them. My friends thought such extensive poultry keeping the limit of folly, and freely remarked that I was going crazy. In those days eggs were almost worthless during the spring and summer months, but would often sell for fifty cents per dozen in the winter. This set me to thinking that perhaps it might be possible to increase the egg yield in the winter, and by so doing, make the fad a better paying proposition. Through my experiments I found that all hens were not alike, that some would be very good table fowl and poor layers. Others would be very good layers and poor table fowl while still other hens would be very fair table fowl and very fair layers. At this time we had all the old fashioned breeds we could get, and discarded them all for the Single Comb White and Brown Leghorns. I had decided that knowledge was of commercial value only when applied, and having a working knowledge of the anatomy and physiology of the hen, I decided to try to turn the same to a commercial account, and in a couple of years had evolved what is now known as the Walter Hogan System, which consists of ascertaining the value of a hen for the **purpose you desire**, by the relative thickness of and distance apart of the pelvic bones. Before 1873 I had communicated this discovery to some of my friends under promise of secrecy. One of them, Albert Brown, once a well known banker of Amesbury, Mass., and H. O. Farrar, of the same place, an overseer in the Hamilton Mills, and a light Brahma specialist. After using the above so called system for a number of years, I developed a new method which I have taught in part privately for some years, and which I now introduce

to the public under the title of "The Call of the Hen," or "The Science of Selecting and Breeding Poultry."

My friends early prophesied that my penchant for invention would land me in the poor house in my old age. So by some occult inspiration I was induced to abstain from publishing any part of my discoveries until 1904, when, by the advise of Ex-Congressman Haldor E. Boen, of Minnesota, to whom I had confided my poultry secrets some years previous, I decided to publish only my first discovery, known as the "Walter Hogan System," (which will be found in the latter part of this work), after the same had been tested at the Minnesota State Experimental Station by Professor Hoverstadt, the Superintendent of the station. However, before taking any steps to bring this matter before the public, I wrote to some thirty or more poultry judges, who were supposed to be selected as judges to officiate at the coming poultry show to be held in Buffalo during the exhibition at that place in 1901, asking them if they knew of any way to tell when a pullet was about to lay. I thought that if they did not know that much of the laying proposition, I would be safe in going ahead with publishing my secrets. The letters I received were left in Minnesota when I came to California shortly before the earthquake in 1906, so I cannot name the judges at present, but they will remember me as the proprietor of the Fergus Falls Woolen Mills, and I must say they replied in a very courteous manner, saying there was no way except the general appearance of the bird, as to its maturity of form, redness of comb and wattles, singing, looking for nest, etc. One only of the number charged me one dollar for this information.

Failing health obliged me to dispose of my manufacturing business and retire to the farm, and it was in the spring of 1905 before I published my "Walter Hogan System," when it appeared in a number of poultry papers. (See Reliable Poultry Journal, March, 1905.) I did not copyright the work at that time, although my experience in mechanical inventions had taught me that I should have done so, and the following August imitations began to appear, until in 1912 a number of different parties in the United States and foreign countries were claiming authorship, and selling it under the same or different titles.

My years of research and expense brought me no financial returns, and in the spring of 1906, I left Minnesota for Cali-

foria, a physical and financial wreck. After having regained my health, I began here at Petaluma to build up the same kind of a flock of layers that I had done in previous years, with the idea of publishing my entire work when I should have bred up a strain of 200-egg hens and better.

After I removed to California, Professor M. E. Jaffa, of the University of California, became interested in the matter, and at the request of the Petaluma Poultry Association, had the discovery tested at the California Poultry Experimental Station for two years, and continued for two years longer for the purpose of determining the value of four-year-old hens as layers, as it is outlined in this book in the chapter relating to the selection of the best layers in a flock.

It was also tested in New Zealand by D. D. Hyde, chief poultry expert for the New Zealand government, and Prof. Brown, of the New Zealand Poultry Experiment Station. I have repeatedly been requested by my friends in different parts of the world to publish the full matter in book form, but poor health and lack of sufficient funds have prevented me from doing so until now. As this work will be copyrighted, I do not anticipate the literary pirates will raid it as they have my former work. In justice to the poultry fraternity I want to say that while I have been, and am now, a member of the American Poultry Association, and have raised poultry fifty-six years, and now raise them by the thousand, I have never in the past classed myself as a poultryman in the strict sense of the word. Hundreds have known me as an inventor, and woolen manufacturer, where one would know me as a poultry crank and the only apology I have for offering this book to the public in a field already crowded with poultry literature, is the earnest solicitation of my friends.

WALTER HOGAN,

Petaluma, California, July 7, 1912.

The Call of the Hen or the Science of the Selection and Breeding of Poultry

By WALTER HOGAN

CHAPTER I.

I received a letter in the winter of 1910 from a woman in Oregon which read as follows.

Dear Sir: My husband is a machinist. He is getting old and his health is failing. We have both worked hard all our lives and have saved enough to buy a small place in the country. We can no longer do hard work, and in looking for some light occupation that would bring weekly returns, we have looked favorably on the poultry business. We have kept a small flock of hens on a town lot for a number of years and think we have done well with them. We also take four poultry papers, but each one tells a different story, and we cannot decide what to do. We have been years accumulating our little savings, and if we should lose them we would have no resources left for our old age. I enclose two articles from the September, 1910 number of the "Pacific Fanciers Monthly." One article gives me to understand that it is almost hopeless to think of making a living with hens if we depend on selling eggs and poultry on the market. The other article holds out the promise of a possible income of a thousand dollars per year from 300 hens if handled under right conditions. One means utter failure and bankruptcy in market eggs and poultry, and the other means the fullest measure of success. Both of these articles are in the same number and one follows the other on the same page. How can you reconcile these two conflicting opinions?

A Common Question Wisely Answered.

By Geo. Scott.

Can a living be made from poultry? Probably there is no one who has attained distinction in the avicultural arena to whom this question has not been put hundreds of times. And it is a question of perennial interest to the poultry keeping public. There are many people who will tell you that a living, and a good living, can be made from poultry keeping alone and as proof of their statement will point out the numerous men whose names are household words in the fancy. On the other hand a vast majority will most emphatically give utterance to statements calculated to deter any poultry keeping aspirant and give weight to their contention by citing hundreds of cases where men have tried and failed. Truly the mass of evidence appears to be with the latter belief, for it is an indubitable fact that for every person who succeeds in this business a hundred fail. But, looking at the matter from a logical point of view, the fact that a minority rely on poultry for their daily bread is ample evidence that it is quite possible to make a living out of poultry keeping, and the abnormal number of failures merely proves that the business is a difficult one.

The fact that a man has failed in some other business takes up poultry keeping with a like result, in no sense proves that poultry keeping does not pay; it is only what could be expected, and any experienced aviculturist would have prophesied such a result. It is, however, useless to explain such things to the man who is contemplating starting a poultry farm. To suggest that he is unfit for the task would be taken by him as an insult, for the public, in its ignorance, has conceived the idea that poultry management is the simplest work that anyone can think of in fact, I question whether an outsider considers it to be work at all.

Such a hold has this belief obtained on the man in the street that it almost amounts to a superstition, and until the fallacy is exploded the number of the unsuccessful will be constantly increased. The public, apparently, cannot understand the difference between keeping a few fowls as a paying hobby and managing a poultry farm is an enormous one, and that the

minor difficulties to be met with in the former case are increased a thousand fold in the latter.

Probably there is no other business which calls for so many qualifications as that of the poultry farmer, and to say that the man who has been successful in any other walk in life is totally unfitted for this business, though somewhat exaggerated, will give the tyro some idea of what is wanted. An intimate, detailed knowledge of poultry management, an unlimited reserve of perseverance, determination, and resource, a genuine love for fowls, the capacity for hard, continuous work for seven days a week, combined with business knowledge and thrifty management, are all essential, and will, with ordinary luck, lead one to the desired goal.

I am very dubious as to whether a living can be made from utility poultry keeping pure and simple; that is to say, by selling eggs and birds solely for edible purposes. A profit can undoubtedly be made, but it is so infinitesimal that the income derived from this source alone would, I am afraid, scarcely suffice for the needs of the most parsimonious. If it is decided to specialize in utility points, pure bred stock must be kept of the popular varieties, and eggs for hatching, day-old chicks, and stock birds must be sold. This will make all the difference, and once a connection has been worked up there is no reason why the business should not pay, and pay well.

The breeding of exhibition birds is, without doubt, the most profitable branch, and when once a name has been made stock and eggs can be disposed of at most remunerative prices. Success, however, cannot be attained at once—it is often the work of years—and many breeders never rise from the ranks of mediocrity. Moreover, much capital is required to start an exhibition poultry farm, any ones expenses incurred in the management are infinitely heavier than is the case where utility points are the only consideration.

I would not advise anyone unversed in poultry culture to give up a situation, however poor, in order to go in for poultry keeping as a means of earning a livelihood. To think of such a thing is foolish in the extreme, but for anyone to burn one's boats behind one in this way would be suicidal. What I would suggest to keeping aspirants (and I believe the number of these reaches well into four figures) is that they should keep as many fowls as they can attend to properly in their spare hours, and see what profits they can make from the birds.

Above all, they must find out if they have a genuine love for the work, for without this nothing can be done. When a name has been made as a breeder of good stock, then and then only, is it time for the amateur to consider the advisability of adopting poultry keeping as a business; and long before this point is reached the glamor of the idea may have faded, for the life of a poultry keeper is, contrary to popular belief, far from being a bed of roses. Practically all the men who are today making a living from poultry commenced keeping fowls as a hobby, and the knowledge and experience which they gained in this way enabled them to found the establishments which are today of world wide reputation.

To those who are qualified for the work poultry keeping offers a good living, but to the idle, the thriftless, or the pleasure seekers of this holiday-making age, it offers more desolate prospects than any other trade or profession. In this business, nothing but dogged determination will enable the beginner to climb the rugged, precipitous path to success, and anyone who is lacking in this essential, or who is afraid of hard, continuous work, will save himself the obloquy of failure by choosing some other field in which to exercise his powers.

THE GOOD LITTLE HEN.

What She Will Do For You If You Will Treat Her Right.

By Mrs. A. Basley

There is money in poultry for the man and especially for the woman that will dig it out. This I can assure the Fanciers Monthly readers if they are in doubt.

"Did it out," seems a curious way of putting it. When I spent a summer in a big mining camp in Colorado I noticed a great many holes in the sides of the mountains. "Yes," said a miner, "and not five per cent of those holes have paid." It was appalling to think of the thousands of dollars lost in those holes. "Give me a hundred hens," said I. The money it took to dig one of those unprofitable holes would have started a fine poultry plant, and the good little hens, would have brought in a living for their owners.

There is money in poultry! Every inch of a hen is valuable. I would like to give you one of the values in the hen and what it costs to keep her.

First, there are the eggs she will lay if properly fed and treated. Twelve dozen eggs per year is the average, although I personally know poultry plants now being operated in Southern California where the output as shown by carefully kept records is sixteen dozen per year. The average price at the Arlington egg ranch for the past year was thirty-one cents a dozen, because the proprietor arranged to have his hens laying when eggs cost the most in the fall and winter months.

Sixteen dozen eggs at thirty-one cents a dozen means each hen brings in \$4.96 in eggs whilst her food costs ten cents per month or \$1.00 per year, leaving \$3.76 as profit for eggs.

There is still another source of profit in the hen and that is in the droppings. At several of the Experiment Stations it has been found that a hen voids about 100 pounds of droppings per year. These droppings have been analysed and show a value as fertilizer of from thirty to thirty-five cents per hen; the value being controlled not only by the market demand but also by the quality; the droppings being richer as fertilizer where the food was rich in protein, and where the hens are fed the "full and plenty" method.

"What do you do with the hen droppings?" I asked a beginner. "Throw them away, glad to get rid of them," was the reply. At the rate of ten dollars per ton that was a waste of fifty cents per hen. Two of our neighbors had lawns which were in so bad a condition from the soil being worn out that they were on the point of having them dug out and new soil put in, and the whole re-sowed, when they thought of their hen droppings. These they had spread over the lawns and then raked off again and the lawns well watered. In a month's time those lawns looked beautiful, better far than if they had been re-made and at far less cost.

When I lived in the Eastern states my window garden was the envy and admiration of every one that passed; there were flowers galore all through the dark winter gloom and cold frosty days. I loved my plants, took good care of them in every way, but the secret of the wonderful blossoms was hen manure!

Once a month I half filled a bucket with hen droppings, poured a kettlefull of boiling water on it, filling the bucket with the water, stirred it with a stick, let it settle and cool and watered the plants with that liquid. I found that hen droppings enrich the ground for almost all plants better than any-

thing; roses are the only exception that I have found, they doing much better when fertilized with well-rotted cow manure.

But to return to our hen. She gives thirty pounds weight of eggs or sixteen dozen valued at \$4.96, she also gives 100 pounds of value fertilizer worth here \$10 a ton, or fifty cents per hen, which brings the amount of her earnings to \$5.40, and at the end of the year we still have the hen to eat or sell at market value, about 75 cents or \$1.00. If we eat her we have the feathers, which are easily saved and can be sold or made into pillows, the bones pounded up and fed to the other fowls.

Poultry pays and pays better than any other legitimate business considering the amount invested. Why then are there any failures? I will tell you why. The failures are not the fault of the good little hen. She will always do her duty; she will always respond to the treatment she gets. The failures are the people who care for the hen. The owners are the failures and not the fowls.

Success is what we all want to attain in whatever we undertake and "lest we forget" some of the things which lead to success may I repeat that there are three essentials to egg production. These are—Comfort, Exercise and Proper Food. I would like to review these.

I wrote the lady that both of these articles were right. Let us see if we can prove the statement. If the reader has ever had any experience with cattle, he knows it would be sheer folly to buy a herd of Polled Angus or Herefords for a dairy farm for they have been bred for years for beef, and practically everything fed to them goes to meat, while it would be just as foolish to buy a herd of Jersey cows and expect to make a living from them raising beef, as they have been bred for years for butter fat and practically everything fed to them goes to milk and cream. If the reader's experience has been with horses, he is aware that a man engaged in teaming would not select the trotting type of horse, neither would a turfman put his money on an 1800-pound Clyde horse if the balance of the field were trotting horses. That would not be horse sense. Now the same comparison holds good in the poultry

field, except with this difference, that the egg type and meat type in poultry have never been segregated into different breeds and each breed bred for a number of years along the line it was intended for—the egg type bred for **eggs alone**, and all birds inclined to meat production discarded, both **male** and **female**, and the meat type bred for **meat**, without regard to eggs except enough to perpetuate the species, just as the typical butter cattle and typical beef cattle have been bred.

I have seen a great many cases like the first mentioned article, where a person would go into the poultry business, and get started with stock that was of the meat type, and not knowing any better, would think that all poultry was the same as his, and the only way any money could be made in the business was to sell fancy birds and eggs at fancy prices. Now these people are not to blame for what they do not know. They think their hens are as good layers as any other hens, and they have no way of knowing any better.

I have also seen a great many cases like Mrs. Basley writes of, except the profits were not so large, owing to different environment I suppose. These people had the same **breed of hens** as the parties before mentioned, but they were fortunate in getting the **egg type**, and they made money with their hens. Each one thinks every other person's hens are the same as theirs if they are the same breed, and that is the reason there are so many different conflicting statements in the poultry papers, and not because the writers are not intelligent or not truthful as some suppose. From a scientific point of view, and apart from the fancy, and as far as the knowledge of meat and egg production is concerned, the poultry business is in its infancy, and the people who write for the poultry papers give their experience for your benefit. That's all.

To further impress on your mind the difference between poultry and other stock, I would say that while some individual cattle of the various beef breeds will not be a paying proposition, the only safe plan is to select your feeders from the beef family, and as some Jersey cows will not pay as butter producers, still, as a breed, they are among the best for that purpose. As some trotting horses do not make good, as a rule they will carry you over the road in good time, and as some draft type teams are not sure pullers, they are a success as a class.

The same general laws apply to all animal nature. The hen is no exception, only in this respect,—that while cattle and horses have been bred so that as a rule a novice can select the type they wish by selecting the breed, hens have not been bred that way. We have what purports to be egg breeds and dual purpose breeds. The first are supposed to be a paying proposition as a whole for egg production. The latter are supposed to be a paying proposition for both eggs and meat combined, some breeders claiming that their breed will give you the very largest number of eggs per year, and the greatest weight of flesh all in one bird. Now these claims are misleading. It is an utter physical impossibility for any hen to be a typical egg type and at the same time be a typical meat type. It is against the laws of nature. We have the Leghorns, Minorcas, Spanish, and a number of other Mediterranean breeds that are called egg type. While the truth is that while they have been bred as best the breeders knew how along the lines of egg production, you can find vast numbers that will not lay eggs enough to pay for the feed they eat. Great numbers in some flocks have all the characteristics of the beef type and will lay about three or four dozen eggs per year and some times not over a dozen. The Plymouth Rock, Orpington, Wyandotte and Langshans are classed as dual purpose breeds. That means hens that will lay a medium number of eggs and give a good large carcass for the table, and while this is true in a majority of cases, I have seen numerous specimens that laid over two hundred and fifty eggs per year, while some would lay little or nothing. In fact, while I have bred Leghorns for more than forty years and they are my favorite breed, I must say I have found as good layers (within a few eggs) in all the other breeds I have named as I have found in the Leghorns and I have also found as poor layers among the Leghorns as I have found in any other breed, and as far as the number of eggs are concerned, as a rule I find that the breed of the hen has nothing to do with it whatever.

I do not wish to be considered dogmatic in anything I may say in this work. I am merely giving the opinions I have formed by observation and experiment during a period of fifty-six years that I have kept poultry, not to make all the money I could out of them but to learn all I possibly could about them, in fact, until a few years ago I never kept poultry

for the money there was in it. The keeping of hens has been a passion with me. I have spent years of time and thousands of dollars, but I think I have found something that will be of inestimable value to the world and I have found it not because I was any better fitted for the work than thousands of other lovers of poultry but because I stuck everlastingly to it without any regard as to whether it paid me in dollars or not.

As previously stated, it is not a matter of breed as to whether a hen is a good layer or not. It is a matter of **type, capacity and constitutional vigor**. First, in almost all breeds there is a type of hen where everything she consumes over bodily maintenance goes to the production of eggs. This we call the typical egg type. Second, there is a type where about half the food consumed over maintenance goes to the production of eggs, the balance over bodily maintenance, going to make flesh. This is called the dual purpose type. As this hen performs two functions that are considered necessary in the economy of nature, the production of eggs and the production of meat on a commercial scale. Third, there is a type where everything consumed over bodily maintenance goes to flesh. This hen we call the meat type for the reason that practically all her energy is used in producing meat.

Now here we have three distinct types of fowl in almost every breed. We have divided these three types into six separate classes for each type:

No. 1 of the **typical egg type** hen may lay about 36 eggs.

No. 2 may lay about 96 eggs.

No. 3 may lay about 180 eggs.

No. 4 may lay about 220 eggs.

No. 5 may lay about 250 eggs.

No. 6 may lay about 280 eggs.

All this is in their first laying year.

No. 1 of the **dual purpose type** hen may lay about 20 eggs.

No. 2 may lay about 50 eggs.

No. 3 may lay about 96 eggs.

No. 4 may lay about 115 eggs.

No. 5 may lay about 130 eggs.

No. 6 may lay about 145 eggs.

The first laying year.

No 1 of the typical meat type may lay from nothing to a dozen eggs. No 2, 3 4, 5 and 6 may lay from nothing to a couple of dozen eggs, and as a rule will lay these in the spring

when the crows lay. The reason is very plain if we stop to think that the same natural laws govern all animal (and human) nature.

The egg type hen is of a nervous temperament. (That is why she is usually free from body lice if she has a suitable place to dust in), and all she eats over bodily maintenance goes to the production of eggs. The hen of the sanguine temperament is a little more beefy and lays less eggs. The hen of the bilious temperament is more beefy still and lays still less eggs, while the hen of the lymphatic temperament will lay little or nothing, almost everything she eats going to flesh and fat. (The reader need borrow no trouble over the meaning of the terms, nervous, sanguine, bilious and lymphatic temperaments if he is not familiar with them, as the charts 1, 2, 3, 4, 5 and 6 will specify matters so that anyone can understand the matter of selecting the different grades of hens with very little study and trouble.)

We have said that we have divided the three grades, the egg type, dual purpose type, and meat type, into six separate classes. There is, in fact, a seventh class, but it is so rare that we will not take it into consideration here, but will explain it later. But we have, in fact, made 90 classes of these six for convenience in selection and the process could be extended indefinitely but it would serve no needful purpose.

Now when we consider all these different grades in the hens of every breed, and the further fact that there is the same number of different grade in the male bird, is it any wonder that there is so much difference of opinion in regard to the profits derived from poultry keeping? We have visited hundreds of poultry plants that numbered from about fifty to two thousand or more hens each. We have seen some flocks of five hundred that would not pay for the feed they consumed for the simple reason that they were not the right type of hens. They were fine looking healthy meat producers, but there was no earthly way possible to feed them that would induce them to lay eggs at any time except a few months in the spring when the crows laid and eggs were cheap. The owners of some of these flocks were bright, brainy, vigorous business men who tried every method that usage and science suggested and fought with sheer desperation to make a success of the business, but went down in failure while their next neighbor, a little pin-headed, conceited specimen of humanity,

strutting around like a peacock, was getting rich with **the same breed of hens.** Luck, do you say? Yes it is mostly a matter of chance. The first man was unfortunate in that he got his eggs or breeding pens from stock such as that described in the first article of the "Fanciers Monthly," while the last man got his eggs or breeding pens from stock described by Mrs. Basley in the second article.

We once visited a gentleman who had a very extensive poultry plant. He had a large number of different breeds yarded off in finely appointed yards with help and financial means to satisfy every need of a poultry plant. His pens of Rocks, Orpingtons and Langshans were remarkable layers, while his Cochins, Houdans and Polish were very good layers. After looking over the last named birds he remarked, "I have 500 Leghorn hens which are 18 months old which I wish you would look at." After we had looked at them a few minutes he said, "What do you think of them as layers?" I replied that if he would tell me which pen laid an average of all the pens, I would tell him in a few minutes. "That pen there," said he, pointing to No. 20, "has laid an average number of all the eggs laid." I looked it up only last night. After examining the hens I told him I would not take them as a gift if I had to keep them one year. "Why," he asked. "Because," I relied, "after keeping them a year and selling them. the price I would receive for the hens and the eggs they would lay, would not pay for their feed. I cannot see why you keep them." The next evening he said to me, "Do you see that man moving into the place over yonder. Well, I have sold those Leghorn hens to that newcomer for \$500." "Is this an exceptional case" you ask. I have only this to say; that all the David Harums are not in the horse business, neither can I see why a poultry man should be his brother's keeper **when it is not the rule in other lines of business.** It seems to me the better way is to study poultry from a scientific point of view, so that you can judge the value of a hen for the purpose **you want her for**, and not have to depend on other peoples' opinions.

By studying this book carefully you will be able to tell approximately the number of eggs a hen is capable of laying in a year; you can also select the hens that will be the best for breeding purposes, for eggs, for meat, or as a dual purpose hen, that is, a hen that will give you the largest number of

eggs possible, with the largest possible amount of meat when you wish to sell her, or the hen that will produce the best broilers, regardless of any one particular breed. Some hens will be very good layers, some very good meat producers, some very good dual purpose type and some very fine fancy birds, and you can mate them with the same type of male bird and breed from these birds for a few generations, and **their progeny will degenerate.** The chickens from the hens and cockerells or cock birds of the 200-egg type may lay less each generation until in eight or ten generations they may not lay enough to pay for their feed. The progeny from some of the best meat and dual purpose type matings, will some times degenerate just as the egg type, until they are practically worthless as profitable meat producers. The chicks from the fancy mating may be a failure from the fancier's point of view. This is the rock that some old poultry breeders are sometimes wrecked upon. One case of national interest was the case of the late lamented Prof. Gowell, of the State of Maine Experiment Station. He had started some years before to breed up a heavy laying strain by using the trap nest, selecting eggs for hatching from hens that were his best layers, and conformed as near as possible to the standard, and using cockerels hatched from these eggs to mate with his hens. Now this was all right as far as it went, but there was something that the professor had not taken into consideration. He had procured the best birds he could find, had trap nested them to discover the hens that were the most prolific layers, had selected the eggs from what he had considered to be the best hens for the purpose (and up the best looking cockerels from these best eggs from the few men had better judgment in this respect.) He had mated best laying hens, and according to all apparent precedents was he not justified in expecting an increase each year in egg production? But what were the results? If reports are true, there was a decrease in egg production, and what do you suppose was the cause? There must be some cause. There is a cause for every effect. Sometimes we think things just happen, that there is no natural law that governs them; that in this or that case it was all chance; that it may not have happened to another person, and will not be likely to happen to us again, and so we dismiss the matter only to have the

same thing repeat itself, until we either solve the problem or meet our doom through it; and thereby hangs a tale.

Some time in the summer of 1905 I received a letter from a doctor in one of the suburbs of Boston, asking me what I would charge to visit Orono, Maine, and have a talk with Prof. Gowell, and incidentally to drop a few remarks that might be of some help to him in his investigations. I had never met the professor, but I replied to the Doctor that I would go. (I was then living in Minnesota.) And would pay my own expenses as I wished to visit Boston, my birth-place and where I first started in poultry keeping in 1857, and it would be a small matter to go from there to Orono, Maine, where Prof. Cowell was conducting his experiments. While I was waiting for a reply, I decided that as Prof Gowell had put so much time and thought into the trap nest proposition and had built so much on that one thing, and that as he could get results from it (only it was a waste of time), that in this first visit to him I would offer only one suggestion, and that was the secret of selecting the birds, both male and female, that would be sure to breed progeny that would be better than their parents **along the lines in which the parents excelled**, or in other words, transmit their predominating characteristics to their offspring, that is, if the cockerel or cock bird and hens were typical meat type birds, the progeny would excel along these lines. Some of them would excel their parents in the production of meat; they would be hardier, better feeders, would digest and assimilate their food better, and consequently arrive at maturity sooner, and be of **better flavor and more tender**, and by breeding these birds along the lines laid down by I. K. Felch, of Natick, Mass., (line breeding he calls it), they would improve each season so that in a number of years, there would be a great difference in their favor over their parents. If the pen was a fancy proposition and had been bred some years for fancy points, the progeny would show a decided improvement in a few years over their parents. If the pen were the typical egg type, the progeny would show an increase over their parents in **stamina and egg production**. I would also have shown him where the birds he was breeding from were deficient in the faculty that governs fecundity, or in other words, which controls the function of reproduction.

Whittier in "Maud Muller" says,—For of all sad words of tongue or pen, the saddest are these,— it might have been. Yes; it might have been. Prof. Gowell might have lived to give many more years of aid to the poultry world and his tragic death been prevented, but he wrote the doctor that he did not want me to come. He seemed determined to solve the problem himself and no doubt would have done so if he had been as care free from routine duties as a man in his position should have been, and I charge his untimely end to society. The men and women in our public institutions who are giving their lives for the benefit of humanity are not appreciated at their true value. We demand the full limit of routine duties, forgetting that it is impossible for a tired body to furnish sufficient nutriment to the brain to solve these intricate problems that are continually confronting them, and while we cause them to suffer mentally and physically individually, we cause ourselves to suffer collectively by our parsimonious treatment of them.

CHAPTER II.

The writer is not one of the long winded kind. I don't like to talk a long time in order to say a few words, or write a dozen pages, where one will do as well. I believe in handing out the chunks of gold with as little dross as possible. I think the reader would rather receive the information I have to offer, in one page, than in a dozen; that he would rather discover the facts in a few feet than to be obliged to hunt over a hundred acres of literary space for the same information. For that reason I will make this work as brief as possible. I will be aided in my effort to do so by the fact that the theories offered in the work have been more or less demonstrated by the "Governmental Experimental Stations of New Zealand, and the States of Minnesota and California; also in the Poultry Plants of the five state hospitals (which contains thousands of hen) in the State of California. Under the auspices of the State Board of Health, and the Physicians of the different hospitals, it might not be a difficult matter to mislead a few poultrymen on a subject that deals wholly with Physiology and Anatomy, but it would be absurd to think for a moment that one could deceive all of the physicians in five state insane hospitals. It seems a man who

would still doubt, would believe the world was flat, especially when he learns that a member of the State Board of Health, told the writer that there was a difference of fifteen hundred dollars in favor of using the system, in one year, in one of the hospitals alone.

We commence in this chapter the unfolding of a method or test by which the reader can tell approximately the value of a hen and a male bird as a breeding proposition (and in the chapter on breeding alone, this book will be worth it's weight in gold, to the fanciers) an egg producer, or a meat producer. It is my desire to make the facts contained in this book, so clear, and the tests so easy of application, that any one can become proficient in the use of them in a short time. Therefore, I have prepared a series of illustrations, showing numerous types and conditions of fowls, also various other facts that may better be shown by pictures, than by explanations alone.

You will remember no doubt that you did not arrive at your present proficiency in reading in a day or two; that it took some little time, and there was a certain system or evolution in your study. You will find the same true of this method. There is a certain process that leads from one step to another, until you have covered the system, when by repeated study and practice you will become proficient and accomplish what at first seems impossible. It may seem an impossible task to handle and grade sixteen hundred hens in six hours, but the writer has done it. With sufficient help to hand me the hens, we graded or in other words tested out sixteen hundred hens in six hours in the State Hospital Poultry yards at Ukiah, Mendocino county, California, March 1910. Not so bad for a semi-invalid of 62, we hear you say. Our reply is, it's practice. You can do the same. Go through the movements with every hen you pick up each day, and in a short time, what at first is difficult will appear quite easy.

For some years previous to 1912 there was great activity in the poultry industry, there having been no lack of poultry papers,, farm papers and magazines, that for a nominal sum would give tuition in poultry culture. The ease of getting a theoretical knowledge of the business, induced thousands to take it up who otherwise would not think of doing so. The apparent ease of conducting the business, the small amount of capital it was supposed to require with the

large and steady income it offered were the will-o-th'-wisps that lured the many to financial loss. I would warn my readers against rushing into the poultry business on a scale beyond their means without first obtaining a working knowledge of the same. With good stock, with the proper environment, a good market and a working knowledge of the business, there is little danger of failure if one is willing to do the work necessary on a poultry plant. It offers the most independent living for the smallest amount of capital of any business I know of.

The requisites for success are the knowledge to know how to be able to select the hen you need for any particular purpose, whether it is for eggs or for meat or fancy. Whether the hen will be a paying proposition or not (this may depend on your market) whether she will be able to transmit her predominating characteristics to her offspring or not. Also you must be able to judge accurately the value of the **male bird** as to what you want him for, and, as to his ability to stamp his offspring with the desired qualities. All the above you can learn from this book. You should also know how to operate incubators, how to feed and care for little chicks, how your hen houses should be built to suit your climate, how your growing pullets should be fed and housed, and the best way to feed to get the most eggs at the smallest cost, and how to feed and mate to get fertile eggs and vigorous chicks. There are numerous books published on all of these latter subjects that you can buy from the publishers of any poultry paper. So we do not take up the matter in this work, we give only what you cannot get anywhere else.

Following is a series of half-tones and explanations representing the method we have used in instructing hundreds of poultrymen and women in California and other states, and the managers of poultry plants in a number of State institutions in the State of California.

..

CHAPTER III.

There are three characteristics that it is absolutely necessary for a hen to possess, for the economical production of eggs or meat. The first is capacity, the second is condition,

the third is type. The reader must bear these in mind in studying the next few chapters, as we will dispose of these before taking other matters into consideration. First, **what is capacity?** Capacity means the abdominal capacity to consume and assimilate the amount of food necessary to produce the number of eggs or the amount of meat necessary to make the individual hen under consideration a paying proposition. Second, **Condition.** If the hen under consideration is an egg type, she must be kept in proper bodily condition by supplying her with the right quantity and quality of food that will furnish her with vitality to produce the number of eggs required of her. Third, **Type.** She must be of a type that everything she consumes is used in producing the desired effect, whether it is meat, whether it is eggs, or whether it is the maximum amount of eggs and meat that a dual purpose hen can produce. With the reader bearing the above three propositions in mind, namely, **Capacity, Condition and Type**, we will proceed to show how to judge the hen with the least amount of time and labor.



Figure 1.—Showing Hens in House.

Figure 1 shows the interior of an open front colony house, largely used around Petaluma. The roosts are connected to

the house by hinges so they can be hooked up out of the way while cleaning the house or examining the hens as in the present case. These houses are usually about 8 feet wide and 10 feet deep inside, with 4 feet posts and pitch roof. These houses are open front with the exception of 18 inches on each side, as can be seen on one side, where hens are going out of house into catching coop. When hens move too slow to suit, one or more persons (children will do) can take grain sack by bottom side in one hand and top side in the other hand and go into house holding sacks spread apart and moving gently close to floor or ground and drive the hens into the catching coop. When coop is full shut down slide door on outside to prevent hens returning to house.

Some readers may have long houses, holding five hundred hens or more. In this case you will need a panel, run diagonally across the house, to a point near the opening, where the hens go in and out of the house, as in Fig. 1 1-2. This panel



Figure 1½.--Showing Two Inch Wire Panel Placed Diagonally Across House Holding 2,000 Hens.

can be as long as required for the width of the house and made in sections if desired and should be six feet or more high.

Figure 2. Shows hens in the coop, when there is enough in we shut down the slide door and proceed as in Fig. 3.

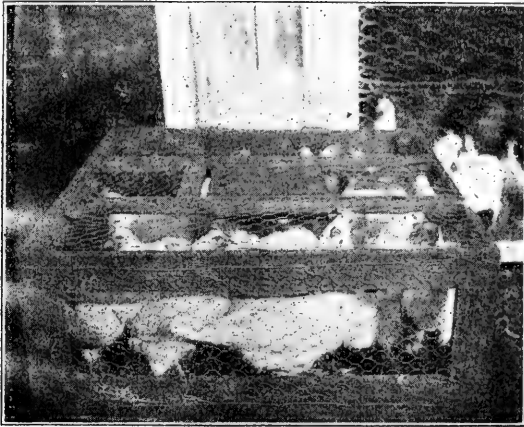


Figure 2.—Showing Hens in Catching Crate.



Figure 3.—Showing How Hens Are Taken Out of Catching Crate.

Fig. 3. Note the slide door on top of the crate, we open this just enough to admit our arm while we grasp the hen firmly by both legs, so she can't twist around and injure herself. A slide door is better than a hinged door as you can open the former just enough to take out the hen without so much danger of any of the other hens escaping.



Figure 4.—Showing Right and Wrong Way to Hold Arms.



Figure 5.—Showing How a Hen may be Held while Testing Capacity.

Fig. 4. Note, how the right arm is held in Fig. 4, this is not the right way but it is the way most persons hold the left arm when they receive their first lesson. Now note how the left arm is held, this is the right position and it is difficult for me to teach students to hold their arms this way. I have to drill them repeatedly before they will do so.

Fig. 5. Shows how the writer holds a bird to ascertain her capacity by holding them this way. After long practice he is enabled to inspect one in a few seconds by having three parties to hand him the birds and to take them from him. **A small light hen or pullet is best to practice with.**



Figure 6.—Showing Where the Hen's Head Should Be So She Cannot See Anything.

Fig. 6. Shows where the head of the bird should be. You will note that her eyes are covered up so she can't see and that has a tendency to keep her quiet while you examine her.

Fig. 7. Gives an example of testing the capacity of a hen. The hand is placed on the abdomen between the two pelvic bones and the rear of the breast bone, the left hand holding the legs is turned under enough to bring the thighs away from the point of the breast bone so that the thighs will not interfere with measuring the depth of the abdomen. The depth of the abdomen will vary with different hens. Some will be one finger (a finger means the width of a finger the widest way. I have called it three-fourth of an inch) between the two pelvic bones, (sometimes called lay bones or vent bones) and the rear of the breast bone. Some hens will be two fingers



Figure 7.—Showing How to Test Capacity.

between the two pelvic bones and the rear of the breast bone. Some will be three fingers. Some hens will be four fingers. Some will be five fingers, some will be six fingers, and occasionally one will be seven fingers between the two pelvic bones and the rear of the breast bone. The depth of the abdomen indicates the capacity or the ability of the bird to consume and assimilate food and it applies to all breeds, except that everything else being equal the longer bodied hen having more

room for the digestive machinery, would have some advantage over the shorter bodied hen.

Fig. 8. This indicates how to hold a hen when you examine her for condition. This is one of the most difficult and serious problems a poultryman has to deal with. To illustrate, I will cite one case out of hundreds that has come under my observation. A gentleman wrote me to call on him as he was having trouble with his hens. When I arrived at his place he told me when he fed his hens well, he got lots of eggs, but some of his hens died. Then when he did not feed them so well they did not lay so many eggs, but none of them died. He said he had repeated this a number of times with the same results. He said the ones that died were as fat as butter. I



Figure 8.—Showing How to Test Condition.

picked up one of the hens. She was in prime condition for the market. I picked up another one, she was very thin. I examined all his hens. I found he had, like a great many poultrymen, three distinct types of hens, the egg type, the dual purpose type, and the meat type. As he had fancy birds in all the different types he did not want to dispose of any of his flock, so

I segregated them into three divisions, the egg type, the dual purpose type, and the meat type. After that he fed the egg type all the grain they could clean up in the scratching shed, and kept a balance ration of dry ground feed before them all the time. The dual purpose hens were fed all the grain they could clean up in the scratching sheds with a small amount of dry ground feed each day. The meat type hens were fed a smaller amount of grain in the scratching shed, with a couple of feeds each week of dry ground mash, just enough to keep them in condition. After this he had no more trouble with his hens not laying in the proper season, and dying from being too fat. He would occasionally pick up a hen in the different pens and note their condition and feed them accordingly. He told me later that before he had taken the lessons he had been working completely in the dark, but now he understood the matter thoroughly and knew what to do.



Figure 9.—Showing One Movement That Has Proved an Aid in Testing Type

Fig. 9. After examining the hen as in Fig. 8, place the hand as in Fig. 9, and hold right hand firmly enough to prevent her from slipping down.



Figure 10.—Showing Another Movement that has Proved an Aid in Testing Type.

Fig. 10. then, move the left hand down as in Fig. 10, and hold left hand firm enough to keep her in place while removing right hand.

TYPE

Fig. 11. Now brush feathers away from vent with back of hand and grasp end of pelvic bone so that it comes flush with outside of fingers as in Fig 11. This indicates the **Type** of the bird. Some will be one-sixteenth (1-16) of an inch thick including the flank as held between the thumb and fore-finger as seen in Fig. 11 and will vary all the way up to one and a quarter (1 1-4) inches, including bone, gristle, fat and flank as seen in Fig o-x.

The reader is aware by this time that we are in the chapter pertaining to **Type**, the last of the three classes that is necessary to divide poultry into in order to make a scientific classification to enable one to arrive at the approximate value of the "Individual Bird" as an **Egg** or as a **Meat** proposition, (and without any regard as to its value as a breeder which

will be shown later). I wish to repeat here that **Type** is controlled wholly by temperament. We must select the temperament or combinations of temperaments that suit our purpose and then with the desired capacity and by scientific feeding so as to keep the subject in proper **condition**, poultry culture will



Figure 11.—Shows Method of Testing Type.

become more of a science with the majority of poultrymen than it is at present. In order to prepare the reader for what is to follow, I will divide poultry into three distinct classes, as to temperaments.

First—the hen that will produce the largest amount of eggs with the smallest amount of meat possible for her capacity is of the nervous temperament. The hen which uses one half of her vitality in producing eggs, and the other half of her vitality in producing meat, in other words, the dual purpose hen, is a combination of both the sanguine and bilious temperaments and is called the hen with the sanguine-bilious-temperament.

The hen who produces the largest amount of flesh and the smallest amount of eggs, consistent with her capacity is of the lymphatic temperament. In a fowl all the different temperaments and their different degrees of combinations are indi-

cated by the Pelvic Bones. In the horse they are indicated largely by the breed. The Arabian, the ideal running and trotting horse is a good type of the nervous temperament. The coach horse, of the sanguine-bilious temperament, and the Clyde is a good type of the lymphatic temperament.

In cattle we have a good example of the nervous temperament in the Jersey, and of the lymphatic in the beef family of Durham, also Hereford and Polled Angus; while the Holstein and Ayrshire cattle are good types of the sanguine-bilious combined. I have made this deviation so I could offer to my poultry friends this thought, that there are certain laws in nature that have no regard for our theories and the better we understand these laws, the less liable we are to make mistakes.

CHAPTER IV.

CAPACITY.

In the preceding chapters, we have given the reader an idea of the method we use in judging the value of a hen for the purpose we wish her for. In the succeeding chapters, we will explain the method in detail. First we will take up capacity.



Figure 12.—One Finger Abdomen.

Fig. 12. Shows a hen with only one finger capacity, (3-4 of an inch) between the two Pelvic Bones and the rear of the Breast Bone.



Figure 13.—Two Fingers Abdomen.

Fig. 13. Shows a hen two fingers capacity, (1 1-2 inches) between the Two Pelvic Bones and rear of the Breast Bone.



Figure 14.—Three Fingers Abdomen.

Fig. 14. Shows a hen with three fingers capacity (2 1-4 inches) between the two Pelvic Bones and the rear of the Breast Bone.



Figure 17.—Six Fingers Abdomen.

Fig. 17. Shows a hen with six fingers capacity (4 1-2 inches) between the two Pelvic Bones and the rear of the Breast Bone.



Figure 18.—Showing Hen in Very Poor Condition.

CHAPTER V.

CONDITION.

We Next Come To Condition.

Fig. 18. Shows hen in very poor condition.



Figure 19.—Showing Hen in Good Condition.

Fig. 19. Shows a hen in perfect condition as indicated by her full breast.



Figure 20.—Showing Hen One Finger Out of Condition.

Fig. 20. Is somewhat thinner as indicated by breast bone. We call her one finger out of condition.

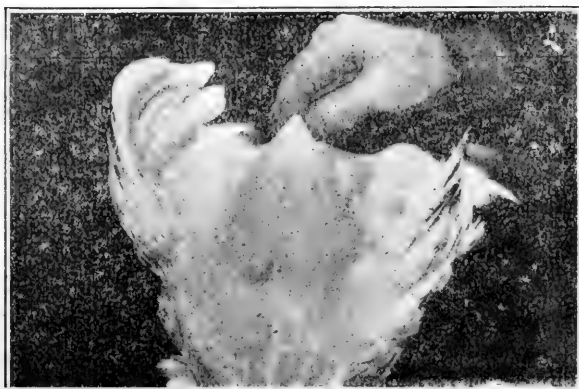


Figure 21.—Showing Hen Two Fingers Out of Condition.

Fig. 21, is still thinner, as reader can see by breast bone. We call her **two fingers out of condition**.



Figure 22.—Showing Hen Three Fingers Out of Condition.

Fig. 22, is still thinner, this we call **three fingers out of condition** and is about as thin as a hen usually gets if there is any chance for her ever being of any use.

Fig. 23, shows about how the first joint of an index finger must be divided up to determine the three degrees of condition.

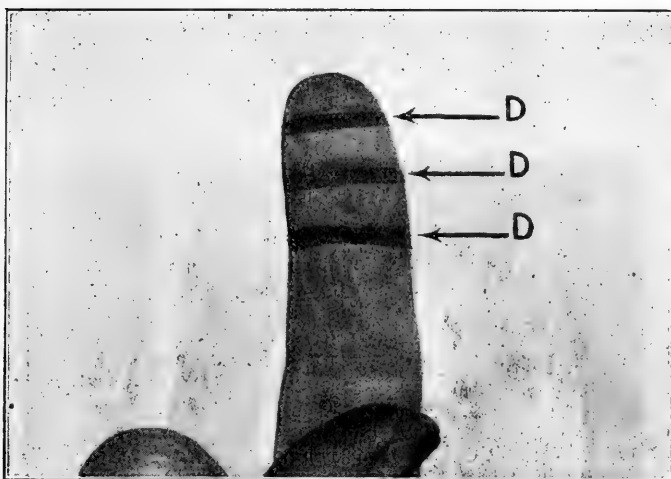


Figure 23.—Showing Where the Imaginary Lines Should be Drawn on the First Joint of Forefinger.

CHAPTER VI.

TYPE.

We now come to "Type." This is indicated by the thickness of the "Pelvic Bones" together with the flesh, fat, gristle and cartilage on same.

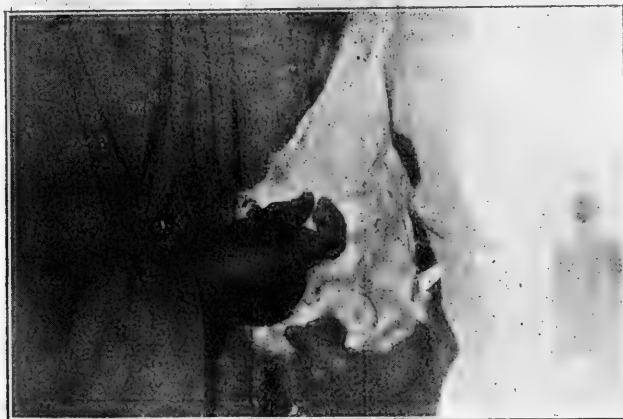


Figure 24.—1-16 Inch Pelvic Bone.

Fig. 24, shows a hen whose Pelvic Bones are (one-sixteenth of an inch thick) that is about as thick as a piece of card-

board that paper boxes are made of and the reader must bear in mind that the measurements of the Pelvic Bones does not mean the bone alone with the skin, flesh, gristle and fat scraped off, as some may suppose, but with all the above included.



Figure 25.—1-8 Inch Pelvic Bone.

Fig. 25. Shows a hen with Pelvic Bones one-eighth (1-8) of an inch thick.



Figure 26.—1-4 Inch Pelvic Bone.

Fig. 26. Shows a hen with Pelvic Bones one quarter (1-4) of an inch thick.

Fig. 27. Shows a hen with Pelvic Bones three-eighths (3-8) of an inch thick.



Figure 27.—3-8 Inch Pelvic Bone.



Figure 28.— $\frac{1}{2}$ Inch Pelvic Bone.

Fig. 28. Shows a hen with Pelvic Bones one-half (1-2) of an inch thick.



Figure 29.— $\frac{3}{4}$ Inch Pelvic Bone.

Fig. 29. Shows a hen with Pelvic Bones three-quarters (3-4) of an inch thick.



Figure 30.—1 Inch Pelvic Bone.

Fig. 30. Shows a hen with Pelvic Bones one (1) inch thick.



Figure 31.— $1\frac{1}{4}$ Inch Pelvic Bone.

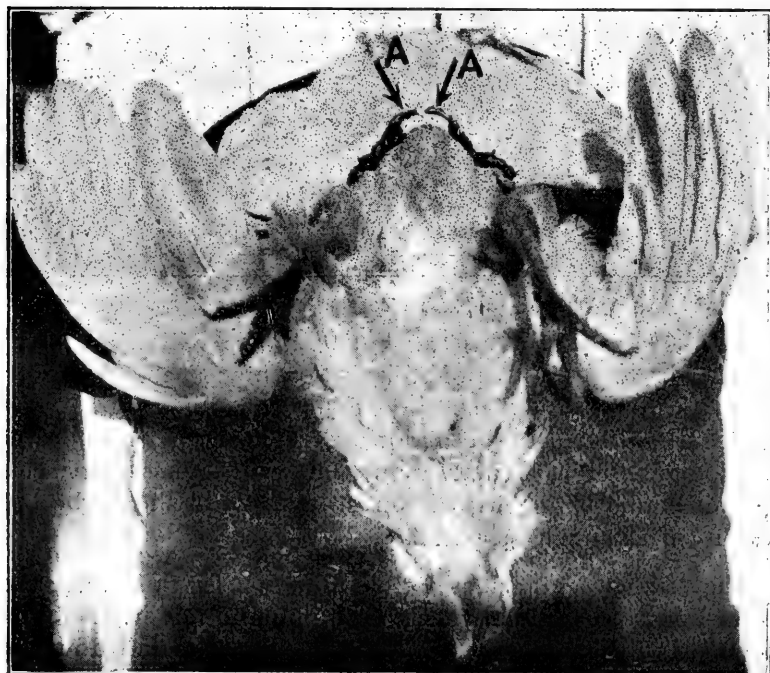


Figure 32.—Crooked Pelvic Bone. "A. A." Position One.

Fig. 31. Shows a hen with Pelvic Bones one and one-quarter (1 1-4) inches thick.

Now, please bear in mind that everything shown and related here refers to **Leghorns**, and applies to other breeds as well, only in a lesser degree, so small, that it amounts to almost nothing as I will show later.

A. A. Fig. 32. Shows the Pelvic Bones with flesh cleaned off.

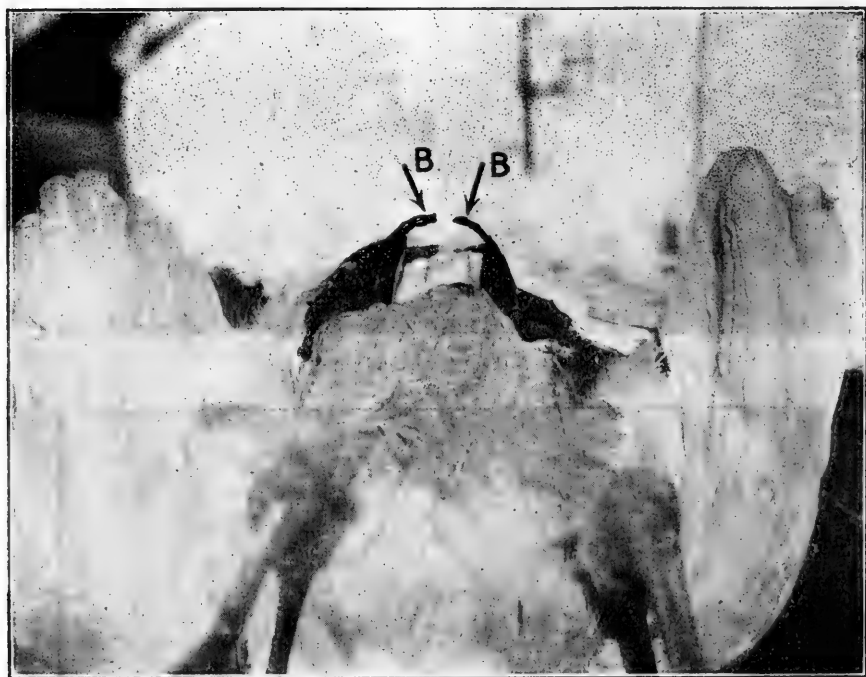


Figure 33.—Crooked Pelvic Bone. "B. B." Position Two.

B. B. Fig. 33. Shows the Pelvic Bones with flesh stripped off farther and painted black so they will show up better, you will notice that the Pelvic Bones in Fig. 32 and Fig. 33 are crooked. The majority of poultry have more or less crooked Pelvic Bones. Sometimes the bones come close together which is an obstruction in laying and should be bred away from as much as possible.

Fig. 34 shows perfect Pelvic Bones. In this form they are very easy to take between the thumb and finger, also when the hen wants to lay, the vent has a chance to fall down be-

tween the Pelvic Bones, which allows the egg to be delivered without straining on the part of the hen. Not every poultryman, but every poultry-woman has seen cases where a hen has gone on the nest and after a couple of hours commence to cackle her head off. Presently we hear the whole flock take up the chorus and going to see what the trouble is we find the

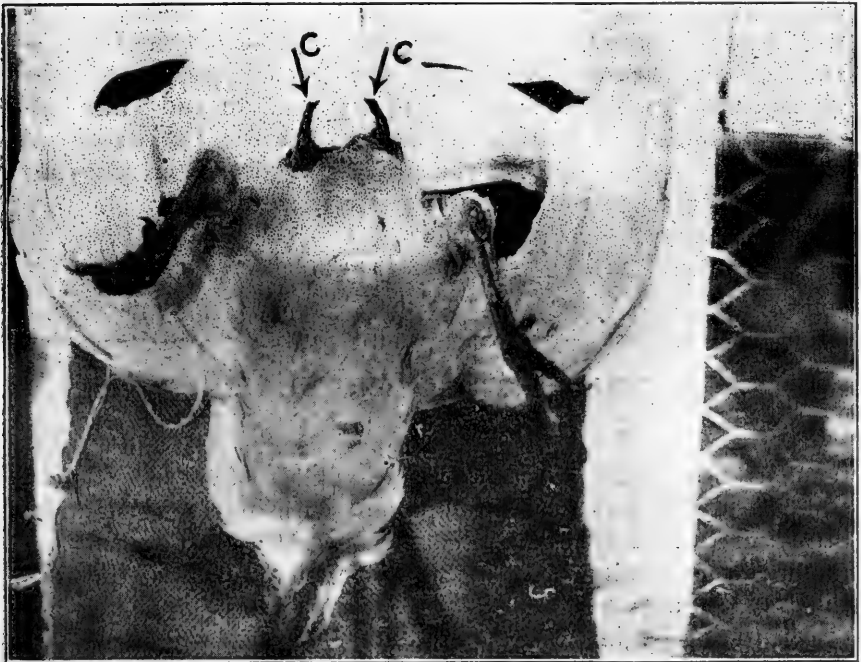


Figure 34.—Most Perfect Pelvic Bones "C. C."

hens holding an "Old Maids' Convention", and declaring they will never lay another egg, it hurts them so much to do so. On examining them we find the Pelvic Bones so crooked they come together like the horns on a Jersey cow, and when the hens lay, instead of the vent dropping down between the pelvic bones allowing the egg to be released in an easy manner in a few minutes after the hen goes on the nest, the egg is forced to be delivered between the Pelvic Bones and Tail Bone, thus prolonging the agony of the hen sometimes for hours, when if she was built right as in Fig. 34 she would be relieved of the egg without pain in a few minutes. And instead of wasting vitality in getting relieved of the egg she would be rustling around for material to build another one and thus add at least 20 per cent to her egg producing value. This matter of crook-

ed Pelvic Bones is more frequent in some breeds than in others and is a serious matter that is very easily remedied by breeding only from birds with the straightest Pelvic Bones, especially looking after the Male Birds as one male bird with crooked Pelvic Bones will transmit this defect to all of his daughters.

When I came to Petaluma I found whole flocks of thousands of hens with crooked bones, now they are very rare. The poultry breeders soon caught on to my Straight and Thin Pelvic Bone idea, and I think the Society for the Prevention of Cruelty to Animals should recognize my service in relieving millions of hens of the agony of parturition.

CHAPTER VII.

THE FIRST LAYING YEAR.

What is meant by the first laying year? All old poultrymen know what the above means and I have no doubt some of my readers may be impatient with me for explaining little things that are so familiar to them. But they will remember that poultry parlance is not all contained in the dictionary, and a great deal of the contents of this book may be Greek to the beginners in the poultry business who will read this work. For this reason I cannot be too plain in my language, or too careful of details in explaining matters. The first laying year has nothing whatever to do with the age of a hen or a pullet. I have had hens that had passed their first laying year when they were 16 months old. On the other hand I have seen hens that were over four years old that had not commenced on their first laying year. The hen that had passed her first laying year when she was 16 months old had commenced to lay when she was four months old, while the hens that were over four years old had never laid an egg. So the reader will see the first laying year commences with the first egg a pullet lays, and ends one year from that date, when her second laying year commences. Some pullets will commence to lay at four months old, while others of exactly the same type, fed and cared for in the same manner will not lay before they are eight months old, owing to different environments. Everything else being equal, poultry will develop

faster on a warm dry sandy soil than they will on a black damp heavy soil. And they will mature much sooner in a good corn country where it is warm in the shade and warm at night than they will in a poor corn country where it is cool at night and cool in the day time in the shade. I have raised Leghorn pullets that were fully developed in size and form and laid a full sized egg when they were four months old.

It can be done in Massachusetts, New York, New Hampshire and Minnesota, and in parts of California where the nights are so warm that one can sleep comfortable under a sheet only. But not where you have to cuddle under a lot of blankets on a summer night to keep warm.

CHAPTER VIII.

THE SELECTION OF TYPES.

If the reader has practiced handling a hen as in Figures 5-6-7-8-9-10 and 11, we will proceed with a lesson in judging hens as to the number of eggs they will lay their first laying year.

We will look for a small hen to commence with, as she will be easier to handle. Having our hen, we will hold her as nearly as we can as in Fig. 5, and try to have her head as in Fig. 6 so she can see nothing. She will then be easier to

CHART 1. One Finger Abdomen

1-16 pelvic bone	36 eggs
1-8 pelvic bone	32 eggs
3-16 pelvic bone	28 eggs
1-4 pelvic bone	24 eggs
5-16 pelvic bone	20 eggs
3-8 pelvic bone	16 eggs
7-16 pelvic bone	12 eggs
1-2 pelvic bone	8 eggs
9-16 pelvic bone	4 eggs
5-8 pelvic bone	0 eggs

handle. Place hand across her abdomen as in Fig. 7. She may be a one finger abdomen hen as in Fig. 12. Then hold her as

in Fig. 8. Her breast may be as in Fig. 19, if so ~~she~~ will be in good condition. Next go through movements as in Fig. 9 and 10 and hold her and examine her Pelvic Bone as in Fig. 11. Her Pelvic Bone may be one sixteenth (1-16) of an inch thick as in Fig. 24. Now look on Chart No. 1. Your hen is one finger abdomen in good condition and Pelvic Bone is one sixteenth (1-16) of an inch thick. You will see that she is a thirty-six egg type hen. That means that if this hen is one of a large number on a commercial poultry plant she is capable of laying three dozen eggs her **first laying year** if she is fed and cared for properly, barring accidents and disease. So we call her a 36 egg type hen.

We will drop this hen and take another from the crate and go through the same movements, hold her as in Fig 5 or 7, with head as in Fig. 6 (she may also be a one finger abdomen hen as in Fig. 12) then examine for Condition as in Fig. 8. Her condition may be good as in Fig. 19, then hold as in Fig. 9 and 10, and measure thickness of Pelvic Bone as in Fig. 11. Her Pelvic Bone may be three eighths (3-8) of an inch thick as in Fig. 27. In that case she would read like this: One finger abdomen, good condition, three-eighths (3-8) Pelvic Bone. Now look on Chart No. 1 and you will find she is a 16 egg type hen. We will drop her and take another from the crate and go through the same movements as before. This hen may be a one finger hen also, in good condition with Pelvic Bones 1-2 inch thick, as in Fig. 28, and by consulting the chart No. 1, we find she is an 8 egg type hen.

We drop her and take another from the crate. She may be a hen with one finger abdomen as in Fig. 12. When we examine her for condition, we find she is like Fig. 20, which indicates that she is one finger out of condition, (the subject of condition is explained in chapter 5), her pelvic bone may be 1-16th of an inch thick as in Fig. 24. This hen will read different from the other hen that was 1-16th Pelvic Bone. This hen is out of condition. She may have been in condition up to a few weeks previous to our examination of her, the cause of her lack of condition may be improper feed or care or both, or it may be due to moulting or she may have been broody. In any of these cases, it would not be the hen's fault that she was out of condition and she should not be held responsible for it. Her condition indicates that there is something wrong and it's up to her owner to right the wrong, and when we do

right the wrong, the hen will come back into condition and her abdomen will then measure two fingers instead of one finger. We must therefore read her as a two fingered abdomen hen, 1-16th Pelvic Bone, when by looking on our Chart No. 2, we find her capacity would be 96 eggs her first laying year if we kept her in condition.

We will drop her and take another hen out of the crate. This hen may be a one fingered abdomen hen as in Fig. 12. When we examine her for condition we find her as in Fig. 21. This indicates that she is two fingers out of condition; her Pelvic Bone may be 1-16th of an inch. Under her present condition, she would lay 36 eggs her first laying year, whereas, if she was kept in good condition she would lay 180 eggs.

We will drop this hen and take another one. She may be two fingers abdomen and her breast bone may be as in Fig. 19. Her Pelvic Bone may be 1-16th of an inch. We would

CHART 2.

Two Fingers Abdomen.

1-16 pelvic bone	.....	.....	96 eggs
1-8 pelvic bone	.....	.....	87 eggs
3-16 pelvic bone	....	..	78 eggs
1-4 pelvic bone	....	...	69 eggs
5-16 pelvic bone.	.....	..	60 eggs
3-8 pelvic bone..	..	.....	51 eggs
7-16 pelvic bone	.....	.....	42 eggs
1-2 pelvic bone	....	..	33 eggs
9-16 pelvic bone....	....	..	24 eggs
5-8 pelvic bone..	....	.....	15 eggs
11-16 pelvic bone..	..	.....	6 eggs
3-4 pelvic bone..	....	.....	0 eggs

read her as a two fingered hen in good condition, Pelvic Bones 1-16th of an inch thick. We will look on Chart two at Pelvic Bones 1-16 and find she is a 96 egg type hen.

We will drop her and take another from the crate. She may be two fingers abdomen and two fingers out of condition as in Fig. 21, with Pelvic Bones 1-4th of an inch thick. She would read two fingers abdomen and two fingers out of condition. She would be four fingers abdomen if in condition and 1-4 Pelvic Bones. Being a four fingered hen (if in

condition), we will look on No. 4 Chart, at 1-4 Pelvic Bones and find she is a 175 egg type hen. We will drop her.

Take another. She may be a two fingered abdomen hen as in Fig. 13, in good condition as in Fig. 19, with Pelvic Bones 3-4 of an inch thick, as in Fig. 29. She would read two finger abdomen, good condition, 3-4 of an inch Pelvic Bones. We will look on Chart No. 2 to 3-4 Pelvic Bones and find this hen will lay nothing. This does not mean that she is an absolutely barren hen, that she will never lay an egg, (I will explain this when we get to the six finger abdomen hen). She may lay a few, perhaps half a dozen, in the spring, when the crows lay but as a **commercial** proposition, she will have no more value than the hen that never laid an egg. Everything she consumes, goes to the making of flesh except what she uses in bodily maintenance. We will drop her and take another. She may be a three finger abdomen hen as in Fig. 14. Her condition may be as in Fig. 19, with Pelvic Bones as in Fig. 24. She

CHART 3.

Three Fingers Abdomen.

1-16	pelvic bone.. . . .	180 eggs
1-8	pelvic bone... . .	166 eggs
3-16	pelvic bone	152 eggs
1-4	pelvic bone.. . . .	138 eggs
5-16	pelvic bone	124 eggs
3-8	pelvic bone	110 eggs
7-16	pelvic bone.. . . .	96 eggs
1-2	pelvic bone.. . . .	82 eggs
9-16	pelvic bone.. . . .	68 eggs
5-8	pelvic bone	54 eggs
11-16	pelvic bone.. . . .	40 eggs
3-4	pelvic bone.. . . .	26 eggs
13-16	pelvic bone.. . . .	12 eggs
7-8	pelvic bone.. . . .	0 eggs

would read three finger abdomen, in good condition, 1-16 (one sixteenth) Pelvic Bone. We look on No. 3 chart at 1-16 Pelvic Bone and find that this hen is a 180 egg type.

We will drop her and take another. She may be another three finger abdomen hen like Fig. 14. She may be in good condition like Fig. 19 and her Pelvic Bone may be 1-2 inch thick, like Fig. 28. She would read three finger abdomen,

good condition, one-half inch Pelvic Bone. We will look on No. 3 Chart, at 1-2 in. Pelvic Bone and find this hen is an 82 egg type hen. We will take another hen. She may be three fingers abdomen like Fig. 14. She may be in good condition like No. 19 and her Pelvic Bones may be 3-4 inch (three-fourths inch thick), as in Fig. 29. We will read her as a three fingered hen, in good condition, 3-4 Pelvic Bone. We will look on No. 3 chart at 3-4 inch Pelvic Bone and find she is a twenty-six egg type hen.

We will pick up another hen. She may be three fingers capacity as in Fig. 14. She may be three fingers out of condition as in Fig. 22, and her Pelvic Bones may be 1-16 of an inch thick as in Fig. 24. We would read this hen as three fingers abdomen; three fingers out of condition and 1-16th (one sixteenth) Pelvic Bone. When a hen is three fingers out of condition, she is in a serious way. She may have been setting or laying heavy and have been underfed. In either case, good care and plenty of the right kind of feed will bring her back into condition, provided she has not contracted tuberculosis, (going light) or some other wasting disease, I will cite a couple of cases, out of hundreds that have come under my observation, one was a barred rock hen that I intended to set on duck eggs. She was six fingers abdomen, in good condition when I put her on the nest, and 1-4 inch Pelvic Bones. That indicated that she was a 235 egg type hen. She was on the nest two weeks before the duck eggs arrived and four weeks on the duck eggs making six weeks setting. Owing to stress of other work and being confined in an out of the way place she was somewhat neglected and when the ducklings were hatched she was three fingers abdomen and three fingers out of condition thus indicating a 138 egg type hen. Six weeks later she was laying and had developed to six fingers abdomen which was her normal condition. Another case was where a gentleman was in a class that took instructions. After the close of the meeting he brought a hen that was three fingers out of condition. He said that was his best hen and asked me how many eggs she would lay. She was three fingers abdomen, three fingers out of condition and 1-16 pelvic bones. Her head and actions indicated perfect health. I told him she would lay 180 eggs her first laying year if her condition had been the same as it was at the present time but if she was my hen I thought I might be able to make her lay

280 eggs. You don't feed her half enough. He replied: "That is the only hen I have that lays a white egg. I got her when a pullet before she commenced to lay. She has been laying about a year and has laid 176 eggs. I had a small lot of hens at the time that were so fat they were dying and I cut down their feed and have fed them sparingly ever since so they would not get too fat and die. I went to his place and found he had three types of hens, the typical meat type (one with pelvic bones one inch and one-eighth thick), some with pelvic bones a half inch thick, and this hen that layed the white eggs whose pelvic bones were 1-16 of an inch thick. I told him to segregate his hens into three lots, and feed them according to their type. Give the egg type all the grain they could clean up each day in scratching shed with a dry balanced mash before them all the time.. The dual purpose type hens should be fed all the grain they wished to scratch for, with an occasional mash and the beef type hens should be fed what grain they could clean up in the scratching shed in about an hour. The litter should be good and deep in all cases. I did not mention charcoal, grit, shells and green stuff as that is not my business. Every man who takes a poultry paper knows that part of the business and every person who keeps poultry should take a poultry paper in order to keep posted on current poultry topics.

The gentleman wrote me over a year later that he had succeeded in bringing the hen up to normal condition as in Fig. 19, but after laying a while she went back to five fingers abdomen and one finger out of condition and had layed 238 eggs her next laying year.

We will now take another hen. She may be four fingers abdomen as in Fig. 15, in good condition as in Fig. 19 and her pelvic bones may be (1-16) one sixteenth of an inch thick as in Fig. 24. She would read four fingers abdomen, good condition 1-16 pelvic bone. If we consult No. 4 chart we will find she is a 220 egg type hen. The next hen may be also four fingers abdomen as in Fig. 15, in good condition as in Fig. 19, with pelvic bones 1-2 inch as in Fig. 28. She would read four fingers abdomen in good condition one half inch pelvic bones. We will see by chart No. 4 that this is a 115 egg type hen. Our next hen may be a four-finger abdomen hen, condition good, pelvic bones 1 inch thick. We would read her as four-finger abdomen, condition good, pelvic bones one inch. If we look

on No. 4 chart at one inch pelvic bones we will find this hen will lay approximately nothing.

CHART 4.

Four Fingers Pelvic Bone.

1-16	pelvic bone	.....	220	eggs
1-8	pelvic bone	.. ..	205	eggs
3-16	pelvic bone..	.....	190	eggs
1-4	pelvic bone	.....	175	eggs
5-16	pelvic bone..	.....	160	eggs
3-8	pelvic bone..	.....	145	eggs
7-16	pelvic bone	.. ..	130	eggs
1-2	pelvic bone	.. ..	115	eggs
9-16	pelvic bone..	.....	100	eggs
5-8	pelvic bone..	.....	85	eggs
11-16	pelvic bone..	.....	70	eggs
3-4	pelvic bone....	.....	55	eggs
13-16	pelvic bone....	.....	40	eggs
7-8	pelvic bone....	.....	25	eggs
15-16	pelvic bone	.. ..	40	eggs
1 in.	pelvic bone..	.....	0	eggs

Our next hen may be a four fingered abdomen hen one finger out of condition, 1-8 pelvic bone. She would indicate a 205 egg type hen under her present condition but we would read her four fingers abdomen one out of condition that would mean a five finger hen if in condition one eighth pelvic bone. We look on No. 5 chart at 1-8 pelvic bone and find she is a 235 egg type hen.

Our next hen may be a five fingered abdomen hen as in Fig. 16. She may be in good condition as in No. 19, and her pelvic bones may be 1-16 of an inch as in Fig. 24. She will read five fingers abdomen, condition good, pelvic bones 1-16. We look on No. 5 chart at 1-16 pelvic bones and find she is a 250 egg type hen.

CHART 5.

Five Fingers Abdomen.

1-16	pelvic bone..	.....	250	eggs
1-8	pelvic bone..	.....	235	eggs
3-16	pelvic bone	.....	220	eggs
1-4	pelvic bone..	.....	205	eggs

5-16	pelvic bone	190 eggs
3-8	pelvic bone.....	175 eggs
7-16	pelvic bone	160 eggs
1-2	pelvic bone.....	145 eggs
9-16	pelvic bone	130 eggs
5-8	pelvic bone.....	115 eggs
11-16	pelvic bone.....	100 eggs
3-4	pelvic bone	85 eggs
13-16	pelvic bone	70 eggs
7-8	pelvic bone	55 eggs
15-16	pelvic bone.....	40 eggs
1 in.	pelvic bone.....	25 eggs
1 1-16	pelvic bone.....	10 eggs
1 1-8	pelvic bone	0 eggs

Our next hen may be a five finger abdomen hen as in Fig. 16; she may be in good condition as in No. 19, and her pelvic bones may be 3-8 thick as in Fig. 27. We would read her as five fingers abdomen, good condition, and 3-8 pelvic bones. No. 5 chart would show us that she was a 175 egg type hen. The next hen may be a five finger abdomen hen, condition good, pelvic bones one inch thick. She would read five fingers abdomen, good condition, one inch pelvic bones. The chart would indicate that she was a 25 egg type hen.

The next hen may be a six fingered hen as in Fig. 17. She may be in good condition and her pelvic bones may be 1 1-4 inches thick (one and one fourth inches thick) as in Fig. 31. I hear the reader say what breed of a hen has pelvic bones as thick as that, or do you mean that both of her pelvic bones are one and one fourth inches thick counting them both together? No, I mean that each one of her pelvic bones is one and one fourths of an inch thick. Counting the bone, gristle, fat and flesh (flank) both of the pelvic bones would be two and one half inches. When we speak of pelvic bones being so, and so thick we always mean one of them. And as to breed. This hen is a single comb white leghorn. She is the typical beef type. You will see by No. 6 chart that she will lay practically nothing and here I will explain this matter. A man once brought me a two and a half year old hen that he had trapped for two years, and asked me to tell him how many eggs she had layed her first laying year. I told him she had never laid an egg. Her abdomen was six fingers, she was in

good condition, her pelvic bones were one and one fourth of an inch thick. He cautioned me to be careful as he had always trap-nested his hens and his record showed how many eggs

CHART 6.

Six Fingers Abdomen.

Nervous Temperament.

1-16	pelvic bone.. . . .	280	eggs
1-8	pelvic bone.. . . .	265	eggs
3-16	pelvic bone.... . . .	250	eggs
1-4	pelvic bone	235	eggs
5-16	pelvic bone.. . . .	220	eggs

Sanguine Temperament.

3-8	pelvic bone.. . . .	205	eggs
7-16	pelvic bone.. . . .	190	eggs
1-2	pelvic bone.. . . .	175	eggs
9-16	pelvic bone	160	eggs
5-8	pelvic bone	145	eggs

Bilious Temperament.

11-16	pelvic bone.. . . .	130	eggs
3-4	pelvic bone.. . . .	115	eggs
13-16	pelvic bone.. . . .	100	eggs
7-8	pelvic bone.. . . .	85	eggs
15-16	pelvic bone.. . . .	70	eggs

Lymphatic Temperament.

1 in.	pelvic bone.. . . .	55	eggs
1 1-16	pelvic bone	40	eggs
1 1-8	pelvic bone.. . . .	25	eggs
1 3-16	pelvic bone.. . . .	10	eggs
1 1-4	pelvic bone.. . . .	0	eggs

they had laid. I replied if that is the case her record shows that she has never laid an egg. He said no more then but brought me another hen asking me how many will she lay. I examined her for capacity. I found she was a six fingered abdomen hen, her condition was good, her pelvic bones were 1-16 of an inch thick. They were both alike as to thickness. I questioned him as to how he had fed her and if she had been sick her first laying year. As he is one of the best breeders in the United States I could depend on him knowing what he was talking about. I asked him then to take off his hat. I could see by the shape of his head he was a strictly honest man. I then told him that I had never raised that breed of hens. But if it was a Leghorn it would lay 280 eggs its first laying year and if a Plymouth Rock it would lay 270. He re-

plied her trap nest record shows she laid 276 eggs from the time she commenced to lay in her 'pullet year, until she had laid one year. That's alright," I replied, "but what about the first hen we examined?" "We have never found any in the trap nest from her," he said, "but she might be in the habit of laying in the yard." And as he was offered \$1000 for her he was very anxious to get some chickens from her. I explained to him that while most typical beef hens could be made to lay a very small number of eggs in the spring when the crows laid, by feeding them a little lean meat, and shrunken wheat and bran on a grass plot of white clover (if the blossoms of the white clover are clipped off) that his hen could not be made to lay as she was a barren hen as indicated by the rigid cord that connected both of the pelvic bones together thus indicating that nature never intended her to lay. I could name a number of professors and physicians that have told me they have discovered the same condition after they had taken my lessons.

The reader will please bear in mind that the two pelvic bones of a hen are not always of the same thickness. Some hens may have one pelvic bone thicker than the other. When this is the case add the two together and half of the number will be the right thickness to judge by. For instance, if one pelvic bone was one-eighth of an inch and the other was one-fourth of an inch the added thickness would be three-eighths of an inch. Dividing this would give you three-sixteenths as the thickness of one pelvic bone. Where one bone is thicker than the other the thinnest one is on the left side of the hen.

Our next hen may be another six finger abdomen hen as in Fig. 17. She may be in good condition as in Fig. 19, her pelvic bones may be 1-8 inch thick as in Fig. 25. She would be a 265 egg type hen.

Our next hen may be a six finger abdomen hen in good condition, pelvic bones 3-8. She would read six fingers abdomen, good condition, pelvic bones 3-8 of an inch. By consulting chart No. 6 we will find this is a 205 egg type hen.

Our next hen may be a six finger abdomen hen in good condition, 1-2 inch pelvic bones. This hen will be 175 egg type hen.

Our next hen may be a six finger abdomen hen in good condition, pelvic bones one inch. We will look on No. 6 chart and find that one inch pelvic bones indicates the 55 egg type hen.

Our next hen may be a four finger abdomen hen. She may be two fingers out of condition as in Fig. 21 and her pelvic bones may be one sixteenth of an inch thick. We would read her as four fingers abdomen, two fingers out of condition. This would make her a six finger hen if in condition. We look on No. 6 chart to 1-16 pelvic bone and find our last hen is a 280 egg type hen if in condition, and its up to us to put her in condition and keep her there as nearly as possible.

I will admit it is a hard proposition to keep the non-setting typical egg type hen in condition but the man that comes the nearest to doing so is the best feeder. I will have more to say in regard to the matter of condition in the chapter on judging utility fowls at the Poultry Shows. This work is a matter of line upon line and I must necessarily repeat the same matter in some respects time after time. But as this is an educational more than an entertaining proposition I hope that my readers will bear with me.

As I have said before there are three types of hens. The hen listed on chart No. 1 as 1-16 pelvic bone is a typical egg type hen. Because all she consumes over bodily maintenance goes to the production of eggs. The hen listed as 3-8 pelvic bone is a dual purpose hen, half of her vitality is used in producing eggs and half in producing meat. The hen listed as 5-8 is a typical meat type hen. All she consumes goes to the production of meat, except what she uses in bodily maintenance. The hen listed as 1-16 pelvic bone on chart No. 2 is a typical egg type hen. The hen listed as 3-8 pelvic bone on same chart is a dual purpose type hen and the one listed as 3-4 pelvic bones is a typical meat type hen the same rule follows in all the charts. All the hens listed as 1-16 pelvic bone are typical egg type hens and they can't be made to pay as a meat proposition. The hens listed in the center of each chart are the dual purpose hens. They can be used as an egg and as a meat proposition. The hens listed on the bottom of each chart are the meat type hens. Nature has fitted them for the production of flesh and there is no human agency that can change them to a paying egg proposition.

Between the above three distinct types, there are combinations of each adjoining types this allows sufficient latitude for the preference of each individual breeder. A person can breed the typical egg type hen and cock bird with pelvic bones 1-16 of an inch thick. If he thinks this type is too delicate he can breed from the 3-16 pelvic bone stock. This is my favorite

type. The hen of this type is better able to stand the vicissitudes of the poultry yard than her finer bred sisters. I will have more to say along this line in the chapter on broilers. I think we have given sufficient examples in chapters 3-4-5-6 and 7 to enable the reader to examine a hen so he may be able to arrive at her approximate value, for the purpose he wishes to use her for.

In a previous chapter we have said there is occasionally found a hen seven fingers abdomen. If the reader finds one he can score her by chart No. 6 and add fifteen eggs to the number indicated. For instance, if the hen is in condition and measures seven fingers abdomen and her pelvic bones are 3-8 thick, chart No. 6 would indicate she was a 205 egg type bird, we then add 15 eggs to the 205 which gives the hen 220 egg capacity. If she is five finger abdomen and two fingers out of condition we call her seven finger abdomen and proceed as above which gives us the same results. There are two other matters I wish to call the attention of the reader to in this place. One is that I have found hens occasionally that laid a great deal better by the trap nest than they scored by the Hogan test, but it was owing to a mistake made in measuring their abdomen, owing to the rear of the breast bone turning up sometimes almost an inch over normal shape, thus indicating a smaller abdomen than really was the case. The other matter is a more serious one, in fact very serious in some flocks. It is the **bagging down of the abdomen over the rear of the breast bone**. Every hen used in the breeding pen should be examined for this defect for if one of them is bred from they are almost sure to transmit their weak ovarian system to their offspring. Some of these hens will make remarkable egg records for a year or so, then will never lay another egg. And again, the eggs are liable to be very infertile and more or less thin shelled and if you have great numbers of hens can hardly tell when these hens stop laying for good unless you trap nest them as their Pelvic Bones do not close up as readily as hens in normal condition.

An ounce of prevention is worth a pound of cure in this case as it is very easy to prevent all this trouble. I meet hundreds of the above hens in my visits to poultry plants but never have a case in my yards. I examine all my pullets when about a year old for possible breeders. If a hen satisfies me as to **Capacity, Type and Prepotency** I then hold her as if I was

testing her for capacity **except** that I hold her by the **right leg only**. I then lay my hand on her breast so that it (my hand) will conform to her shape and draw it slowly along her breast bone (or keel) from front to rear. When my hand reaches the rear, if I feel the slightest indication of her abdomen dropping the least bit below the rear of the breast bone I reject the hen as a breeder and thereby save myself a world of trouble in the future.

CHAPTER IX.

PREPOTENCY.

We will take up in this chapter Prepotency, the science of breeding poultry so that we can breed with a definite knowledge of what we are doing and not leave it to intuition or chance. It is an old saying that like begets like. This seems to be true in some cases but seems not to be true in other cases. Students of human nature can readily see where it has apparently failed. Some children will resemble and act like one parent and some will resemble and act like the other parent. Then again some children will be like neither of the parents. Breeders of horses and cattle are well aware of the variations in offspring from the type and characteristics of sire and dam. It is more through persistency in breeding, than the general knowledge of any scientific principle that we have succeeded in producing, the grand types of animals we see at our State Fairs. The breeding of poultry is no exception to the above rule. While some breeders have good success in breeding for the desired type of bird, whether for fancy, for eggs or for flesh, others will have very poor success.

The purpose of this chapter is to explain to the breeder who has had poor success a method that will enable him to breed with the full understanding as to what he is doing. It is a well known fact among the clothing trade, that if a woollen manufacturer has a sample of cloth presented to him, he can **manufacture** thousands of yards that will be an exact duplicate of the sample. The same is true in other industries. But suppose the reader gives an order to one of our well known **poultry breeders** for 1000 pullets, to be delivered at four months old; these pullets to be housed, fed and cared for as the breeder designates, and to approximately lay a certain number

of eggs their first laying year, how many breeders do you suppose could fill the order. Until a majority of them can do so the poultry industry will not be on a business basis, but will be more or less a gamble.

I have said that seemingly like does not beget like in some cases. We will take, for instance, a hen that is five fingered abdomen in good condition, 1-4 pelvic bones. She will scale up as a 205 egg type hen. We will make up a pen of these hens with a 205 egg type cockerel or cock bird, we raise 100 pullets from this mating and they may scale 175 egg type. We then say like does not produce like. Here is where we make a mistake. In one sense we are right; in another we are wrong. Nature makes no mistakes. We have mated 205 egg type male and female and we get as a result 175 egg type product. That's as plain as the nose on one's face and we throw up our hands in despair and say it's all luck and chance. Another party mates up the same type of birds and gets a lot of pullets that average 210 eggs their first laying year. Still another party mates up the same type of birds and does not get a chick.

The reader may smile, but this is no dream. A number of such cases have come under my observation. One case was that of a professor in one of the Southern California public institutions. He had a pen of twelve Black Minorcas, headed by a splendid looking cock bird, also a pen of twelve Andalusians. He said there was something peculiar about these hens and he wanted to know if I could detect it. I tested all the Andalusians and told him they should average 140 eggs their first laying year and I would expect twelve eggs out of every thirteen to be fertile. After testing the Minorcas I told him they would average about 160 egg type, but if they were mine I would not set any of their eggs while they were mated to the present cock bird, because I would not expect them to hatch and if any did hatch they would be degenerates. He said this is the second season I have bred from the birds. I always get good hatches from the Andalusians, but although I see the rooster serve the hens, I have never been able to hatch a chicken from the Minorca pen. I replied he serves the hens out of sympathy.

Another case was a Barred Rock hen, the only one a neighbor had in a small flock of Houdans. He called me one day, saying he had a remarkable pullet at his place and he

wanted me to call over and tell him how many eggs she would lay her first laying year. She had been laying two mnths and he was keeping her record. I went with him, tested the hen and told him she would lay 250 eggs but I did not think that any of them would hatch. After her first laying year was up he showed me her record. She had laid 258 eggs and although he had a good Barred Rock cock bird with her and had set a number of settings under hens he failed to hatch a single chick. I could cite a great number of such cases.

In the first of these cases the fault was with the male bird. In the last case the fault was with the hen. In both cases the trouble was caused by a lack of Prepotency (amativeness) and not through any defect in the anatomy of the birds. Everything in the universe is governed by certain immutable laws. If we understand these laws and can discover a way to control them we may be able to use them to our advantage. Does the reader ever stop to consider these matters? What in your opinion is the greatest effort of nature? The writer thinks it is the effort to reproduce the species in all their different forms of animate and inanimate life. If the case was otherwise this earth would be barren of grass and shrubs, of flowers, and fruits and of every living, moving thing on land and in the sea. What a desolate old world this would be with only bare dirt and rocks and water. And when we consider what a wonderful thing life is can we doubt that nature has made some extraordinary provisions for controlling its inception. In the wild state the survival of the fittest prevented degeneracy of the species but under domestication birds cannot follow their instincts. And their owners should be familiar with nature's laws in order to be able to breed intelligently.

When the writer was twelve years of age he took up the study of human nature and later had help from that great teacher, Prof. O. S. Fowler. Years of practice in dissecting and in anatomy and in the study of the skulls of animals and birds gave me the opportunity to study the construction of the different skulls, and classify them as to the known habits of the birds or animals under consideration. The knowledge gained in this way was of inestimable value in later research in the selection and breeding of poultry. I am positive that without this early training I never could have accomplished what I have.

After raising my first lot of Leghorns in 1869 I decided to

dispose of all breeds but the Leghorns and light Brahmas. I said I would raise Leghorns for eggs and Brahmas for meat. Up to that time I had not paid much attention to the individual laying qualities of the birds. Experience had taught me that the Light Brahma when fed right and of the right age made a delicious table fowl and I was led to believe the Leghorns were all great layers. That was a good many years ago. And we have made wonderful discoveries and progress in science and the arts since that time. The reader can imagine my surprise when I found by experience that some of my leghorns laid very few eggs and laid them only in the spring months. Others laid large numbers and laid late in the fall and early winter. In those days we had no cold storage plants and while eggs were very cheap in the summer they were very dear in the winter and I decided to experiment with my Leghorns with a view to getting more eggs in the winter. After a few years of study and experiment I mated the best egg type birds and from some pens got good results from other pens not so good, and from still others very poor results. My previous studies in anatomy had enabled me to select the matings from birds that were all of the same type, and I expected to raise a lot of poultry that would be duplicates of their parents as far as their egg-laying qualities were concerned. But after numerous experiments in mating the 180 egg type cock bird with 180 egg type hens I found I could not depend on getting definite results.

Some are born rich some are born handsome, and some are born lucky. The writer was born with none of these gifts but with a combination of faculties that compelled to invention. To wander and toil and delve in the fields and the byways and the mines of the mysterious. These researches with the aid received by studying the pioneers in the same lines of investigation led to the discovery as the writer thinks of the fundamental principle that underlies the reproduction of the species. After a number of matings that were more or less discouraging failures I decided to look to the brain of the bird as the seat of the cause of a great many of the variations between the characteristics of the offspring and those of the parents. I had previously demonstrated by experiment that environment had an influence on the shaping of the skull of the birds. By focusing on this subject the skull knowledge I had gained in the previous nine years I was led to think that the brain governed most of the functions of the body, and if

so why not the reproductive function? I reasoned that as I had mated up several pens of the same type of hens with the same type of male birds and that as there was no difference in their temperaments that the hens all looked alike all weighed alike, and were all in the same condition or in other words they were all in perfect condition, (to be more explicit the hens were three fingers abdomen, pelvic bone 1-15 of an inch thick all hens were in good condition, the cock birds were two fingers abdomen, in normal condition and pelvic bones 1-16 of an inch thick, all hens were alike and all cock birds were alike and all were about a year old)—that there must be something apart from the anatomy and physiology of the hen that governed or in some measure controlled the reproductive functions. As I had exhausted all my resources in the above lines I was very reluctantly obliged to enter a new field of research—the field of Phrenology. I killed the cock birds that had given us the best results, boiled their skulls until free of flesh and found them as in No 1, Plate 35. The skulls of the cock birds that gave the next best results were like No. 2,

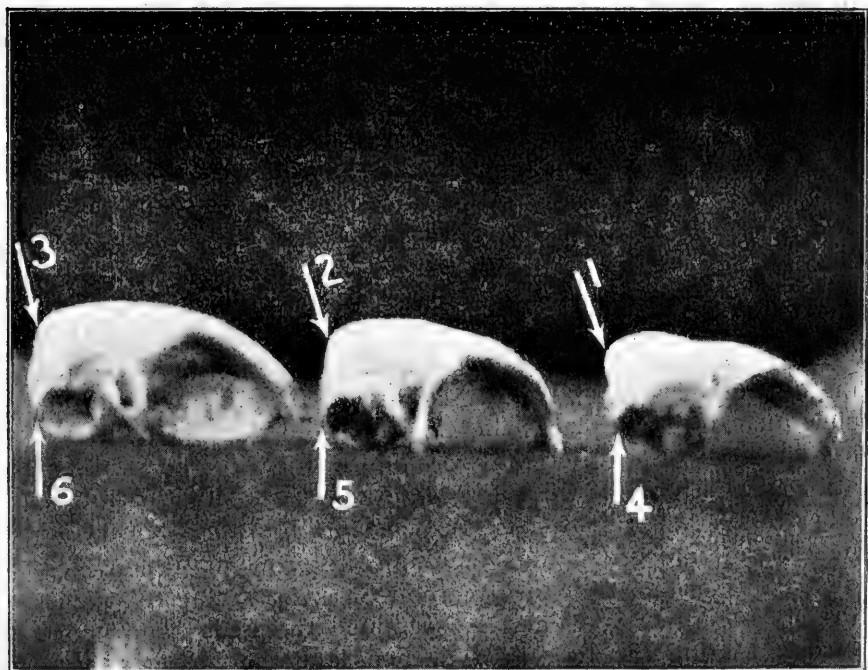


Plate 35.—Three Degrees of Amativeness. (Otherwise Called Prepotency.)

Plate 35, and the skulls of the cock birds that gave the poorest results were like No. 3, Plate 35. The arrows 4-5 and 6, show the base of the brain but the arrow at No. 6 should be 1-16 of an inch further back to be correct. And right here is where we were on the point of the second great secret in breeding that would verify the saying that like begets like, the first discovery was, that if we wished to raise pullets that would be good layers we would have to mate good laying hens with the same type of male bird and not with the meat type, that is the male birds would have to be of the same temperament, of the same anatomy and of the same physiology as the hen. I found that if I had a hen that laid 180 eggs by the trap-nest and if I wanted to raise a lot of pullets that would average 180 eggs I could not depend on the trap nest to aid me any farther than to tell me the number of eggs a hen laid, what particular eggs she laid, and the progeny of each hen, both male and female. I also found great variations in type in the mature cockerels from each individual hen, which we considered was due to the difference in type of the male bird and the difference in vitality of one or both birds at different times during the breeding season, sometimes the hen at other times the cock bird transmitting their characteristics. When I was assured of this through numerous experiments we reasoned that our failures were because **the male birds were of a different type from the hens**, and when I had demonstrated that the male birds were of a different physiology by practice and scientific measures and mated accordingly I flattered myself with the assurance that I had discovered all that was necessary in order to breed poultry intelligently, but after more experiments I was not wholly satisfied with results; and as I had adopted the motto, "Like begets like" I reasoned that although the birds we had mated were alike as far as we could see, the remaining difference must be some place where I had failed to look for it. My knowledge of the different variations in form of the skulls of animals and birds **of the same breed** together with the knowledge I possessed of human skulls led me to investigate the head as the only remaining factor in the problem. When I reduced this proposition to a method I was able to measure its potentiality. Then I assembled the hens and cock birds. Mating the 180 egg type hens and the 180 egg type cock bird each bird with the same degree of prepotency. Then and not until then had I ever knowingly mated like to like.

For a great many years, like many others, I thought I had mated males to like females but I was mistaken. And here is where I discovered my second great secret. After this I mated like to like more intelligently and the results were more satisfactory. I consider the selecting of the male birds for mating along anatomical and physiological lines **together with the proper understanding and use of the faculty that governs the reproductive function** as the greatest discoveries ever made in the poultry industry. The reader may think there is very little difference in the skulls on Plate 35. If you add an inch to the length of a man's legs it does not seem to make much difference in his height but if you add an inch to the end of his nose it would make a great difference to his looks. I found this expansion on the back of the skull corresponded to the organ of amativeness in the human family. I found that when it was large in both male and female the parents possessed the ability to transmit their **PREDOMINATING CHARACTERISTICS** to their offspring. If the parents were fancy birds their progeny would excel, in some cases, their parents in feather, vigor and other good qualities if the parents were of the egg type. Some of the chicks would be as good and some better layers, and more vigorous than the parents. If of the meat type the progeny would be of a stronger constitution, of a quicker growth and assimilate their food better. In a word if both parents have this organ (called prepotency by some) **large the chicks will be more likely to be equal to, and some will excel, their parents along the lines in which the parents predominate.** If the parents have the organ small, the chicks will not be so good as the parent stock, but will degenerate along the lines that the parents excel in. If a hen is a 200 egg type, and she has this organ small she will be just as valuable as an egg producer as if she had the organ large, but she will be of no value as a breeder. She will be an old maid from choice, and her eggs will not be fertile, if she has the organ small enough. If the male bird has it small his eggs will not hatch well; and if small enough they will not hatch at all. I have found a few cases where the cock bird had the organ of (Amativeness) prepotency large and failed to fertilize the eggs, but the cases are very rare and I attribute it to weakened or diseased nerves; as for instance the nerves of the teeth or sciatic nerve in the human being.

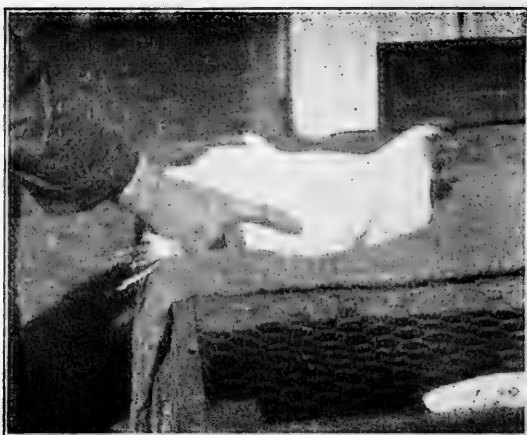


Figure 36.—Holding Hen Ready to Put in Sack.

Fig. 36 shows how to hold a hen before putting her in a sack to measure this organ.



Figure 37.—Holding Legs With Right Hand and Gathering Sack Around Legs With Left Hand.

Fig. 37 shows how to put her in the sack, holding legs with right hand, with back of hen against bottom of sack, and gathering sack around legs with left hand.

Fig. 38 shows tying sack around legs so that she cannot move while examining her for prepotency. (Cut a little off of the corner of the sack, just enough to get her head through. Hen in cut 38 is too far out of the sack.)

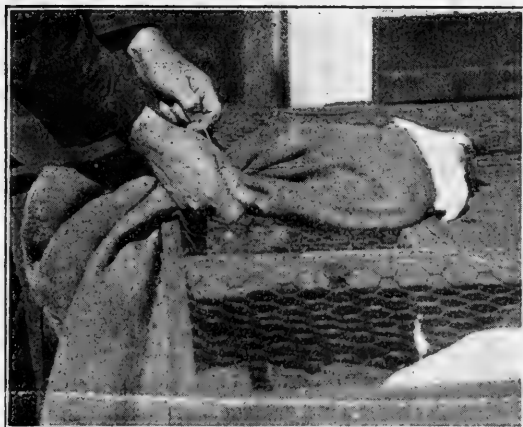


Figure 38.—Tying Sack Around Legs So Hen Cannot Move While Examining Her For Prepotency.

The best way for a beginner to learn how to handle a hen for prepotency is to select a hen you wish for the table. Cut the corner of a gunny sack, hold her as in cut 36, put your hen in sack and tie her as in Fig. 37 and 38, then make a hook of wire or a hair pin, attach it to a string with small weight or stone, hang hen up against barn or shed head down, back against building, take long-bladed pocket or other knife with sharp point, insert in hen's mouth and draw across the roof of the mouth at the back of the brain, at the junction of the neck, severing the blood veins, then immediately force the knife through the roof of the mouth into the brain. The knife should be forced well into the brain, which will sever the nerves and the bird will feel no pain; then insert hook in the nostril and the weight will hold the neck straight. The hen should bleed freely. After bleeding has stopped clean mouth and surrounding parts of blood and place hen in some convenient place as in Fig. 39. The thumb nail on the left hand and nail on the forefinger of the right hand should be longer than the thumb and finger so the flesh on end of thumb and finger will not prevent the nail from entering the slight depression between the skull and neck.

We will suppose the reader has handled the hen as suggested above. Lay the dead hen as in Fig. 39, take hold of comb or head and pull neck up with right hand and while holding head up so neck will be stretched out turn the head down with right hand so the back of the head will point up and beak will point

down as much as possible. This will make the projection of the brain No. 1, Plate 35 appear more prominent so it will be easier to locate it; then draw ball of thumb of left hand down on head until you feel back of skull; when you feel back of skull with ball of thumb then turn first joint of thumb down until thumb nail fits in between end of skull and neck and well up against base of brain; then while holding left hand and thumb as in Fig. 39 put forefinger of right hand at base of brain behind the ear as in Fig. 39 between the neck and the skull and against the skull behind the ear as in Fig. 39. The ear can be readily discovered by lifting up the hairy covering that covers it. The thumb nail must be held perfectly straight across the neck as in the cut, and not sideways; and the forefinger must be held perfectly at right angles with the thumb, or the length of projection at arrow 1, plate 35, from the base of the brain arrow 4, Plate 35 cannot be measured accurately.

The reader will notice that my thumb nail is ahead of my forefinger nail in cut 39. This indicates that this hen is wholly lacking in the ability to transmit any redeeming qualities to



Figure 39.—Showing Thumb $\frac{1}{8}$ of an inch Ahead of Forefinger Indicating Hen is Totally Lacking in Prepotency.

her offspring, also that she has no desire for offspring. If this was a male bird the eggs from his matings would be infertile. Fig. 40, shows thumb on line with forefinger. Matings from this type of head would not produce very fertile eggs, and the progeny would deteriorate each year if they were bred from stock with heads like this. If the parents were

200 egg type, their egg yield and vitality would be reduced each generation of breeding. If they were of the beef type



Figure 40.—Thumb Even With Forefinger Indicating She Has Prepotency Small.

their vitality and ability to produce flesh economically would diminish with each generation. If they were a fancy type the breeder would be up against a stone wall of discouraging experiences.



Figure 41.—Showing Thumb $\frac{1}{8}$ of an Inch Behind Forefinger Indicating Hen Has Prepotency Full.



Figure 42.—Showing Thumb $\frac{1}{4}$ Inch Behind Forefinger indicating Hen Has Prepotency Large.



Figure 43.—Showing How to Hold Bird Between Knees After You Become Proficient in Testing Head While Bird Is In Sack.

Cut No. 41 shows a hen with prepotency full, i. e., thumb 1-8 of an inch behind forefinger. Sometimes a poultryman will be lucky enough to mate up a lot of pens of the right type for his purpose with heads like No. 41. His business prospers and his neighbors call him lucky. While others are going bankrupt raising poultry he holds his own and is making a good living. No. 42 shows a hen with an excellent head for breeding purposes. The thumb in this case is one fourth of an inch behind the fore finger. If this hen is mated to a male bird of the same type and prepotency her eggs will be very fertile and a large number of the progeny will be equal to and some will excel the parent stock in the lines that predominate in the parents. **By selecting these few specimens each season for breeding,** it is possible to breed a highly valuable type in the course of time. Cut No. 43 shows how to hold bird between knees after you become proficient in testing head while bird is in sack.

CHAPTER X.

TESTING HENS ON A LARGE SCALE USING
CHARTS 44 AND 45.

I will describe in this chapter how I cull hens when we have large numbers of them as we have in poultry plants in California. I shall take it for granted that the reader has no method of selecting the good from the poor layers, except, perhaps, the "Walter Hogan System," or some of its pirated forms that are now used extensively in all parts of the civilized world, and which is based on the theory that the value of a hen as an egg producer depends on the relative distance apart of her Pelvic Bones and the thinness of same. We will suppose the reader has three hundred hens, one lot is about a year and four months old, another lot is about two years and four months old, and another lot is about three years and four months old. Each lot has been kept in separate yards, so there can be no mistake in regard to their ages, or they have been toe punched or otherwise marked. We notice more or less feathers flying around the yard, thus indicating the season of the year when moulting is near at hand. Everything else being equal the poorest hen moults first, and if she is a **very poor layer**, she will stop laying when she begins to moult, and will not lay again until the crows lay in the spring. We consider it is about time to cull out the poor layers and send them to market. The next thing that comes to mind is the question, "What is a poor layer?" That all depends on the price you get for the eggs, the price of feed, houses, etc. I raised poultry in Todd Co., Minn., in 1886 and 1887, and sold good lumber at the saw mill for \$5.00 per 1000 feet. Wheat was about a cent per pound and wheat screenings for chicken feed could be had for the hauling. It is very evident that a poorer class of layers might have been kept at a greater profit when supplies were at that low price, than can be profitably kept when supplies are as high priced as they are at the present time of writing, June 1913. So the reader can see that the matter of the profitable hen is a local matter. At this writing you can buy nearly two bushels of wheat in some parts of Minnesota for what you will pay for one in California. I was told a few days ago that you could buy twice as much oats at the present time in Minnesota as you can in California for the same money.

When studying chart 44 and 45, we see there are certain figures lined off from the rest. This is for the purpose of aiding the reader at a certain time each year to select the poor layers from the good ones without using the charts, thereby saving the time necessary to look over the chart and classify each hen.

The charts 1, 2, 3, 4, 5, and 6 as the reader will learn by bearing in mind the following instructions, need be used only to determine the laying score of the individual hen.

The first figure underlined in chart 44 is in the column indicating three fingers abdomen from one-sixteenth pelvic bone to

One Finger Abdomen.	Two Fingers Abdomen.	Three Fingers Abdomen.
<u>1-16</u> pelvic bone 36 eggs	1-16 pelvic bone 96 eggs	1-16 pelvic bone 180 eggs
1-8 pelvic bone 32 eggs	1-8 pelvic bone 87 eggs	1-8 pelvic bone 166 eggs
3-16 pelvic bone 28 eggs	3-16 pelvic bone 78 eggs	3-16 pelvic bone 152 eggs
1-4 pelvic bone 24 eggs	1-4 pelvic bone 69 eggs	1-4 pelvic bone 138 eggs
5-16 pelvic bone 20 eggs	5-16 pelvic bone 60 eggs	5-16 pelvic bone 124 eggs
3-8 pelvic bone 16 eggs	3-8 pelvic bone 51 eggs	3-8 pelvic bone 110 eggs
7-16 pelvic bone 12 eggs	7-16 pelvic bone 42 eggs	7-16 pelvic bone 96 eggs
1-2 pelvic bone 8 eggs	1-2 pelvic bone 33 eggs	1-2 pelvic bone 82 eggs
9-16 pelvic bone 4 eggs	9-16 pelvic bone 24 eggs	9-16 pelvic bone 68 eggs
5-8 pelvic bone 0 eggs	5-8 pelvic bone 15 eggs	5-8 pelvic bone 54 eggs
	11-16 pelvic bone 6 eggs	11-16 pelvic bone 40 eggs
	3-4 pelvic bone 0 eggs	3-4 pelvic bone 26 eggs
		13-16 pelvic bone 12 eggs
		7-8 pelvic bone 0 eggs

Figure 44. Showing First Chart for Commercial Egg Plant Where Large Numbers of Hens Are Kept.

five-sixteenth pelvic bone. The second is in the column indicating four fingers abdomen from one-sixteenth pelvic bone to seven-sixteenth pelvic bone. The third is five fingers abdomen from one-sixteenth to nine-sixteenth pelvic bone. The fourth is six fingers abdomen from one-sixteenth pelvic bone to eleven-sixteenth pelvic bone.

We will make a copy of charts 44 and 45 on a piece of white card board, and hang them up in a convenient place in the yard where the sixteen-months old hens are penned. We will suppose that the hens are all closed in the house or houses. We put catching coop in position as in Fig. 2, and drive hens

Four Fingers Abdomen.	Five Fingers Abdomen.	Six Fingers Abdomen.	Plant	Where	Large
1-16 pelvic bone 220 eggs	1-16 pelvic bone 250 eggs	1-16 pelvic bone 280 eggs			
1-8 pelvic bone 205 eggs	1-8 pelvic bone 235 eggs	1-8 pelvic bone 265 eggs			
3-16 pelvic bone 190 eggs	3-16 pelvic bone 220 eggs	3-16 pelvic bone 250 eggs			
1-4 pelvic bone 175 eggs	1-4 pelvic bone 205 eggs	1-4 pelvic bone 235 eggs			
5-16 pelvic bone 160 eggs	5-16 pelvic bone 190 eggs	5-16 pelvic bone 220 eggs			
3-8 pelvic bone 145 eggs	3-8 pelvic bone 175 eggs	3-8 pelvic bone 205 eggs			
7-16 pelvic bone 130 eggs	7-16 pelvic bone 160 eggs	7-16 pelvic bone 190 eggs			
1-2 pelvic bone 115 eggs	1-2 pelvic bone 145 eggs	1-2 pelvic bone 175 eggs			
9-16 pelvic bone 100 eggs	9-16 pelvic bone 130 eggs	9-16 pelvic bone 160 eggs			
5-8 pelvic bone 85 eggs	5-8 pelvic bone 115 eggs	5-8 pelvic bone 145 eggs			
11-16 pelvic bone 70 eggs	11-16 pelvic bone 100 eggs	11-16 pelvic bone 130 eggs			
3-4 pelvic bone 55 eggs	3-4 pelvic bone 85 eggs	3-4 pelvic bone 115 eggs			
13-16 pelvic bone 40 eggs	13-16 pelvic bone 70 eggs	13-16 pelvic bone 100 eggs			
7-8 pelvic bone 25 eggs	7-8 pelvic bone 55 eggs	7-8 pelvic bone 85 eggs			
15-16 pelvic bone 10 eggs	15-16 pelvic bone 40 eggs	15-16 pelvic bone 70 eggs			
1 in. pelvic bone 0 eggs	1 in. pelvic bone 25 eggs	1 in. pelvic bone 55 eggs			
	1 1-16 pelvic bone 10 eggs	1 1-16 pelvic bone 40 eggs			
	1 1-8 pelvic bone 0 eggs	1 1-8 pelvic bone 25 eggs			
		1 3-16 pelvic bone 10 eggs			
		1 1-4 pelvic bone 0 eggs			

Figure 45. Showing Second Chart for Commercial Numbers of Hens Are Kept.

in same as in Fig. 1. When there are enough hens in the coop, shut down slide door that holds them in. In this case it is necessary to keep only four figures in mind, any four you prefer will do. Here in California I use Figs. 5-7-9-11, for the hens sixteen-months old. Figs. 3-5-7-9 for the hens twenty-eight-months old, and Figs. 1-3-5-7, for hens forty-months old. We keep large numbers of hens, and in this way we can sort out the market hens each year in a short time, as we do not have to stop and figure out the percentage of loss for each year of age, as these figures come **near enough** to suit our purpose. If they do not suit the local market the reader can use any figures that will.

Now take a hen out of the catching coop as in Fig. 3, and hold her as near as possible as in Fig. 5. Place hand on abdomen. She may be one finger abdomen in good condition, her pelvic bone may be one-sixteenth of an inch thick, her capacity is three dozen eggs her first laying year. She has laid all these eggs, and will lay no more until the next spring, when the crows lay and eggs are cheap. So we decide to put this hen in the shipping crate, to be sent to market. We take another hen from the catching coop, and go through the same process. She may be a two fingered abdomen hen in good condition, her pelvic bones one-sixteenth of an inch thick. This indicates a hen that may lay eight dozen eggs her first laying year. As a rule when hens are so fed and cared for they will lay their maximum number of eggs their first laying year. They will as a rule lay **about** 15 per cent less each year after, provided they are given the same care and feed. In this case the hen in hand would lay about eight-five eggs. If you think that will pay you let the hen drop out of your hands into the yard where you are standing. If you think it will not pay to keep her, put her in the shipping crate for the market. The next hen may be two fingers abdomen, one finger out of condition as in Fig. 20, with pelvic bones one-fourth of an inch thick. If this hen's comb and wattles are red and the hen is strong and active, being one finger out of condition indicates that she is not being properly cared for, either in feed or environment, or both. In the condition she is in at present, if continued the whole year, she would lay about sixty-nine eggs, while if kept in normal condition she would lay 138 eggs. (See chart No. 3.) So we call her a good hen and drop her.

The next hen may be a three finger abdomen, five-six-

tecnths pelvic bone, and in normal condition. If this hen was in Petaluma we would drop her as she would be a paying hen.

The next hen may be three fingers abdomen in normal condition as in Fig. 19, and pelvic bone three-eighths of an inch thick. We put this hen in the shipping crate for market as it will not pay to keep her any longer if in Petaluma. She will not pay for her board after this time and leave enough profit.

The next hen may be four fingers abdomen in normal condition, and seven-sixteenths of an inch pelvic bone. She being a 130 egg hen it will pay to keep her another year so we drop her. The next hen may be four fingers abdomen in normal condition, and one-half inch pelvic bones. This hen will lay approximately 115 eggs her first laying year, but not enough her second year. So we put her in the shipping crate for market.

The next hen may be a five fingers abdomen hen and in good condition, nine-sixteenths pelvic bone. She is 130 egg type hen so we drop her.

The next hen is five fingers abdomen in normal condition, and five-eighths of an inch pelvic bones. This is a 115 egg hen so we put her in the shipping crate.

The next hen may be six fingers abdomen in normal condition, and eleven-sixteenths pelvic bones. She will be a 130 egg type hen, so we drop her.

The next hen may be six fingers abdomen in normal condition, pelvic bones three-fourths of an inch thick. She will be a 115 egg type hen so we will put her in the shipping crate.

The next hen may be three fingers abdomen three fingers out of condition, and one-eighth of an inch pelvic bones. If her comb and wattles are pale and bloodless, she is no doubt diseased and should be disposed of, but if her comb and wattles are red, it indicates, as a rule, that she is out of condition on account of accident or lack of feed. In her present condition she scores 166 egg type. If we get her in one finger better condition she will measure four fingers abdomen and score 205 egg type. If we can get her in two finger better condition, she will measure five finger abdomen and may be three-sixteenths pelvic bones, on account of becoming a little more fleshy, and score 220 egg type and if we can get her in three fingers better condition, she would then be in normal condition, and her pelvic bones might be three-sixteenths or one-fourth of an inch thick, if the latter she would score 235 egg

type. (We will have more to say on the changing of thickness of the pelvic bone, in last of chapter 18.)

We will continue selecting or separating the good from the poor layers, in the same manner, keeping every hen for another year in the three finger abdomen class that is five-sixteenths of an inch pelvic bone and thinner, sending every hen to market that is over five-sixteenths of an inch pelvic bone in the three finger abdomen class, keeping every hen in the four finger abdomen class that is seven-sixteenths of an inch pelvic bone and thinner, and sending every hen to market that is over seven-sixteenths pelvic bone in the four finger abdomen class, keeping every hen in the five finger abdomen class that is nine-sixteenths of an inch pelvic bone and thinner, and sending every hen to market that is over nine-sixteenths of an inch pelvic bone thick, keeping every hen in the six finger abdomen class that is eleven-sixteenths of an inch pelvic bone and thinner, and sending every hen to market that is over eleven-sixteenths of an inch pelvic bone thick.

I want to say here that there is nothing arbitrary in regard to the charts 44 and 45. Each poultryman can draw the lines where he thinks it will best suit his purpose. A great many years of experimenting has led the writer to believe these charts answer the purpose very well.

We have disposed of all the one year and four-months old hens, and will move our outfit to the two year and four-months old hens, and arrange catching coop and charts as in the first case.

The first hen we take from the coop may be a one fingered hen in good condition. All one and two fingered hens in good condition over one year and four-months old, as a rule should be disposed of. There is no profit in them after they have laid their allotted number of eggs their first season, or in other words, after they commence to moult in their first laying year. So after this we will not consider them in this connection. There is a great difference in the number of eggs a flock of hens will lay each year as they grow older. Some will lose 5 per cent, some 10 per cent, some 15 per cent, and some 20 per cent. Some will not lay anything. (This will be explained later) after their first laying year. It depends altogether on the vitality of the hen and how she has been fed and raised, and the variations in the percentage of eggs laid by exactly the same type of hens will vary with different poultry

keepers, and also with the same poultry keeper, varying more or less in each separate pen proving that environment has more or less to do with egg production, all other things as far as human knowledge is concerned being equal. Some people who are good mathematicians, but who are wholly ignorant of animal nature, look surprised when I explain to them the difference between classifying the production of a number of like machines, with the production of a number of hens of the same score in egg production. As a scientific proposition it is impossible to write a chart before hand that will fit every case. If we took 1000 hens of any pronounced type, say 100 egg type which were fed, housed, and cared for in exactly the same manner, and one of them laid five, ten or fifteen eggs more or less some year than the other 999 hens, it would prove our contention or theory, from a scientific point of view. I am sure that one hundred expert poultrymen could take 100 hens of the same general type, that would score the same egg capacity and would all be in the same condition, and each poultryman feed and care for his 100 birds for four years the best he knew how, and very few of them would agree on a set of figures that would give the percentage of decrease in egg production each year. The one who fed the heaviest and produced the most eggs, would have the largest percentage of decrease, while the ones who bred for hatching eggs, and did not force their hens with condiments and stimulants, would get the least number of eggs and the lowest percentage of decrease, not figuring the percentage of decrease from the number of eggs actually laid but from what the hen would lay each year.

The writer does not claim that he has discovered a system that will infallibly give results **just** as he has written them. No poultry man needs to be told this, but for the benefit of the amateurs I have inserted the above caution. The writer claims by years of investigation and practice to have formulated a poultry code as contained in this book, that is commercially the approximation of perfection.

We will return to our two year old hens. We said all one and two fingered hens should be sold, and we will consider them no more than to put them in the market crates when we find one. The reader will remember that in selecting the sixteen-months old hens we retained only those in the three, four, five and six finger abdomen column, that measured five, seven, nine and eleven-sixteenths of an inch or less, and everything below these lines went to market. In the show room when the

writer judges utility birds we use the charts so as to score each bird according to its capacity for egg production, but when we cull the poultry on commercial plants, in order to save the time of looking on the charts we keep in mind only four figures, for the hens of any age that we are examining. For hens about sixteen-months old we use the figures five, seven, nine, eleven. For hens with three fingers abdomen we use the figures five-sixteenths; for four fingers abdomen seven-sixteenths; for five fingers abdomen, nine-sixteenths; and for six fingers abdomen, eleven-sixteenths. All under three fingers abdomen goes to the market and all under the lines go also.

For the two year and four-months old hens, we keep in mind the following figures, three, five, seven, nine. For the three fingers abdomen hen three-sixteenths pelvic bone; four finger abdomen hen, five-sixteenths pelvic bone; five finger abdomen hen, seven-sixteenths pelvic bone, and six finger abdomen hen, nine-sixteenths pelvic bone. Everything below these figures goes to market, also all one and two fingered abdomen birds there may be in the lot.

We now go to the hens that are three years and four-months old. Any one and two fingered abdomen birds that we may find goes to market, and all the three fingered abdomen birds below one-sixteenth pelvic bones. For the three years and four-months old birds we bear in mind one, three, five, seven. Three fingers abdomen hen, one-sixteenth pelvic bones; four fingers abdomen hen, three-sixteenths pelvic bones; five fingers abdomen hen, five-sixteenths pelvic bones, and six fingers abdomen hen, seven-sixteenths pelvic bones. All below these lines go to market.

If the reader has some good hens that he wishes to breed from, he can use the Figs. 1, 3, 5.

The fourth year when he wishes to select from the four, five and six fingered abdomen hens it will be four fingers abdomen, one-sixteenth pelvic bones; five fingers abdomen, three-sixteenths pelvic bones; and six fingers abdomen five-sixteenths pelvic bones. Very few will want to keep hens as long as this. They will be five years and about four-months old when you will sell them. Most people here sell them about the time they commence to moult, after they are two years old, but I selected the hens used at the California State poultry experiment station, to test this method as far as the egg laying qualities were concerned, and the hens I selected as hens that

would pay at four years, made a good paying record.

The reader will understand that the way we have just been selecting the paying hens is the way we select when we have large numbers. This is the way I selected sixteen hundred hens in six hours at the poultry farm of the Ukiah State Hospital, Mendocino Co., Calif., and at other State hospitals and poultry plants. We do not have to stop to figure out the percentage of loss of each bird. You can take any combination of figures you wish, as 1-4 in., 3-8 in., 1-2 in., 5-8 in., for sixteen-months old birds; 1-16 in., 3-16 in., 5-16 in., 7-16 in., for twenty-eight months old birds, you can figure out the percentage of loss each year, and take a combination of figures that will suit your purpose. You have only to carry four figures in your mind. The percentage of loss each year is computed by good poultrymen to be from 10 per cent to 20 per cent in egg production on plants that are run for hatching eggs. If you forced your hens with an excess of meat and condiments the loss will be according to how you feed them, and no one can tell what it may be but yourself. Some poultrymen get all there is in a hen out of her the first season then sell her.

CHAPTER XI.

THE MALE BIRD.

This is not a treatise on cattle or horses, but we have to use them very often to illustrate the matter in hand. Stock raising has been brought to more of a science than poultry raising and is well understood by thousands of our progressive farmers. I have met hundreds of them who could describe to me the points I would have to consider in selecting a good paying butter fat, beef or milk proposition, both in dam and sire, and while there may be as many poultrymen who understand the selection of poultry, both male and female, for egg and meat production, I have failed to meet them, and while I was made the butt of ridicule by the poultrymen when I issued my first pamphlet entitled the "Walter Hogan System," in March, 1905, the stock raisers who were interested in poultry stood by me to a man. The reason was that the cattle men had been studying along the utility lines in both sire and dam, in order to develop the milk, butter fat, and beef producing capac-

ities of their cattle. It was a comparatively easy proposition for them. The form of the animals was plainly to be seen. They were not covered with a coat of fluff and feathers that hid the shape and form of the subject. It was easy to distinguish between the cat ham of the butter fat type, and the full deep ham of the beef type. It was no trouble to compare the udders, milk veins, and wedge shape type of the Jersey, with the full rounded build of the Hereford or Poled Angus.

On the other hand the poultrymen to some extent were deceived by the appearance of their hens. Take for instance the Cochin and the Bantam. They would hold about the same relation to each other as the lordly Durham would to the fine bred Devon, yet I have found Bantam hens with as deep abdomens as a great Cochin hen; and it is my opinion that if poultry were as bare of feathers as cattle are, the poultry industry would be as far advanced at present as is the cattle business.

The greatest impediment to the successful breeder of poultry has been the inability to select the male bird of the required type. The custom in vogue at the present writing with most poultrymen is to trap nest their hens and raise cockerels from the best layers as indicated by the trap nest. The trouble with this method is that while the hen may lay a large number of eggs, she may not have the faculty to transmit her laying qualities to her offspring, and her cockerels may be deficient in both egg-laying qualities and the ability to transmit what good qualities they may possess to their progeny.

Again I have seen a great many cases where poultry farmers would send away and buy a lot of cockerels. The man that raised and sold them had no knowledge of how to classify them, and the man who bought them knew he was buying cockerels and that is all he did know about them. He could not be sure whether they would increase his egg yield or not. He had to pay his money and take chances. It was nothing more or less than a gamble. But the days of gambling in the poultry business are past for the intelligent progressive poultryman. No longer will he be obliged to trust to luck or intuition. He will be able to select his male birds with as much assurance as his hens, and instead of groping in the dark he will have the satisfaction of seeing and knowing just what he is doing, by bearing in mind the instructions in this chapter. The reader will by this time be familiar with the different types and capac-

ities of hens, and will not be surprised to learn there is a similar number of variations in the male birds; and if one wishes to produce a certain type and capacity in a pullet or cockerel, he must select the parent birds that will produce that type. We know how to select the hen, we will now take up the study of how to select the male bird.

We go through the same movements in selecting or testing the male bird as we do in selecting the hen, but we use a different set of charts. For example it is possible for a hen to change from six to three fingers in abdominal capacity within a month, and be healthy and active and in another month to return back to her original six fingers capacity. But it is not so with the male bird, after he is mature. I have tested male birds at nine months of age that scored four fingers abdomen, one-sixteenth pelvic bone, that did not change for four years except that their pelvic bone being one-sixteenth of an inch thick at nine months old, I have found them to be one-eighth of an inch thick at eighteen months old. They had increased in thickness of bone from one-sixteenth to one-eighth. These were egg type male birds. The meat type will vary more or less in the thickness of the pelvic bones depending on how much flesh they put on or lose, between the different times of examining them.

It will be easy to distinguish the egg type cock bird from the meat type bird. The former has thin pelvic bones **whether in flesh or not**. While the latter has thick pelvic bones with a more or less lump of gristle on the end of them whether he is thin or in good flesh. I have found that in classifying the male bird as we have the hen as to type and capacity for a certain egg yield it requires less abdominal capacity in the male bird than in the female. For instance, the male bird that is two fingers abdomen and one-sixteenth of an inch pelvic bone is the same type and capacity for breeding purposes as the three finger abdomen hen one-sixteenth pelvic bone. The male of the same class as regards capacity does not require as large abdomen as the female. This is so self evident that it would be a waste of time to try to explain the reason for it.

I have heard poultrymen say that the male bird is half of the flock. I wonder if they stop to consider whether this is so or not. My birds are wonderful layers, and I mate one male bird to every twelve hens, and from a breeder's point of view I consider my male birds a great deal more than half the flock.

If I mate 100 egg type cock birds with 200 egg hens the progeny may lay about 150 eggs, thus reducing my egg yield about 25 per cent in the progeny of each of the twelve hens. For this reason I have given as much thought to the male bird as I have to the hen, and in arranging the charts for the male birds, have experienced a great deal of difficulty, as it takes years of time and hundreds of matings to arrive at conclusions that would be approximately correct. In any one case, as everything else (type capacity and breed) being equal, care and environment has a dominating influence on the product whether eggs or meat, consequently if a number of investigators were working on this proposition using the same system of selection they could not help but arrive at somewhat different conclusions, as to figures but that would not affect the value of the system.

MALE BIRD—CHART A.

One Finger Abdomen.

1-16	pelvic bone	84 egg type
1-8	pelvic bone	75 egg type
3-16	pelvic bone.. . . .	67 egg type
1-4	pelvic bone.. . . .	58 egg type
5-16	pelvic bone.... .	50 egg type
3-8	pelvic bone.. . . .	41 egg type
7-16	pelvic bone.. . . .	33 egg type
1-2	pelvic bone.. . . .	24 egg type
9-16	pelvic bone	16 egg type
5-8	pelvic bone	7 egg type
11-16	pelvic bone.. . . .	0 egg type

MALE BIRD—CHART B.

One and One Half Finger Abdomen.

1-16	pelvic bone	132 egg type
1-8	pelvic bone.. . . .	120 egg type
3-16	pelvic bone.. . . .	109 egg type
1-4	pelvic bone.. . . .	98 egg type
5-16	pelvic bone.. . . .	87 egg type
3-8	pelvic bone	75 egg type
7-16	pelvic bone.. . . .	64 egg type
1-2	pelvic bone...	53 egg type
9-16	pelvic bone.. . . .	42 egg type

5-8	pelvic bone.. . . .	30	egg type
11-16	pelvic bone.... . . .	19	egg type
3-4	pelvic bone.. . . .	8	egg type
13-16	pelvic bone.. . . .	0	egg type
7-8	pelvic bone.. . . .	0	egg type

MALE BIRD—CHART C.

Two Fingers Abdomen.

1-16	pelvic bone.. . . .	180	egg type
1-8	pelvic bone.. . . .	166	egg type
3-16	pelvic bone.. . . .	152	egg type
1-4	pelvic bone.. . . .	138	egg type
5-16	pelvic bone.. . . .	124	egg type
3-8	pelvic bone.. . . .	110	egg type
7-16	pelvic bone.. . . .	96	egg type
1-2	pelvic bone.. . . .	82	egg type
9-16	pelvic bone.. . . .	68	egg type
5-8	pelvic bone	54	egg type
11-16	pelvic bone.. . . .	40	egg type
3-4	pelvic bone.. . . .	26	egg type
13-16	pelvic bone.. . . .	12	egg type
7-8	pelvic bone.. . . .	0	egg type

MALE BIRD—CHART D.

Two and One Half Fingers Abdomen.

1-16	pelvic bone.. . . .	200	egg type
1-8	pelvic bone.... . . .	185	egg type
3-16	pelvic bone.. . . .	171	egg type
1-4	pelvic bone.. . . .	156	egg type
5-16	pelvic bone.. . . .	142	egg type
3-8	pelvic bone.. . . .	127	egg type
7-16	pelvic bone.. . . .	113	egg type
1-2	pelvic bone	98	egg type
9-16	pelvic bone.. . . .	84	egg type
5-8	pelvic bone.. . . .	69	egg type
11-16	pelvic bone.. . . .	55	egg type
3-4	pelvic bone.. . . .	40	egg type
13-16	pelvic bone.. . . .	26	egg type
7-8	pelvic bone.. . . .	11	egg type
15-16	pelvic bone.. . . .	0	egg type

MALE BIRD—CHART E.

Three Fingers Abdomen.

1-16	pelvic bone	235	egg type
1-8	pelvic bone.. . . .	220	egg type
3-16	pelvic bone	205	egg type
1-4	pelvic bone	190	egg type
5-16	pelvic bone.. . . .	175	egg type
3-8	pelvic bone.. . . .	160	egg type
7-16	pelvic bone	145	egg type
1-2	pelvic bone.. . . .	130	egg type
9-16	pelvic bone	115	egg type
5-8	pelvic bone.. . . .	100	egg type
11-16	pelvic bone.. . . .	85	egg type
3-4	pelvic bone.. . . .	70	egg type
13-16	pelvic bone	55	egg type
7-8	pelvic bone	40	egg type
15-16	pelvic bone	25	egg type
1 in.	pelvic bone.. . . .	10	egg type
17-16	pelvic bone.. . . .	0	egg type

MALE BIRD—CHART F.

Three and One-half Fingers Abdomen.

1-16	pelvic bone.... .	257	egg type
1-8	pelvic bone.... .	242	egg type
3-16	pelvic bone	227	egg type
1-4	pelvic bone.. . . .	212	egg type
5-16	pelvic bone.. . . .	197	egg type
3-8	pelvic bone	182	egg type
7-16	pelvic bone.... .	167	egg type
1-2	pelvic bone	152	egg type
9-16	pelvic bone.. . . .	137	egg type
5-8	pelvic bone.. . . .	122	egg type
11-16	pelvic bone.... .	107	egg type
3-4	pelvic bone	92	egg type
13-16	pelvic bone.. . . .	77	egg type
7-8	pelvic bone	62	egg type
15-16	pelvic bone.. . . .	47	egg type
1 in.	pelvic bone.. . . .	32	egg type
17-16	pelvic bone.. . . .	17	egg type
1 1-8	pelvic bone.. . . .	0	egg type

MALE BIRD—CHART G.

Four Fingers Abdomen.

1-16	pelvic bone	280	egg type
1-8	pelvic bone	265	egg type
3-16	pelvic bone	250	egg type
1-4	pelvic bone	235	egg type
5-16	pelvic bone	220	egg type
3-8	pelvic bone	205	egg type
7-16	pelvic bone	190	egg type
1-2	pelvic bone	175	egg type
9-16	pelvic bone	160	egg type
5-8	pelvic bone	145	egg type
11-16	pelvic bone	130	egg type
3-4	pelvic bone	115	egg type
13-16	pelvic bone	100	egg type
7-8	pelvic bone	85	egg type
15-16	pelvic bone	70	egg type
1 in.	pelvic bone	55	egg type
17-16	pelvic bone	40	egg type
1 1-8	pelvic bone	25	egg type
1 3-16	pelvic bone	10	egg type
1 1-4	pelvic bone	0	egg type

We consider the male bird of so much importance that we have made seven charts for his classification, as to egg and meat types. See charts A, B, C, D, E, F, and G. While chart A may not be needed, and chart B used very seldom we thought it best to include them. All old poultrymen and stock raisers know that so many considerations enter into the breeding and raising of live stock of all kinds, that it is impossible to lay down hard and fast rules that can be depended upon before hand to bring definite results in all parallel cases. This is written as a caution to beginners, especially to those whose experience has been at the desk or behind the counter.

Figure 46 shows a cock bird four fingers abdomen and, Fig. 47 shows the same bird one-eighth pelvic bone, making him a 265 egg type bird.

The reader will see by Figs. 46 and 47, we use the same methods to determine the egg value of a male bird, as we use for the hen, except that we do not think it advisable to take



Figure 46.—Showing Four Finger Depth of Abdomen of 265 Egg Cock Bird.



Figure 47.—Showing $\frac{1}{8}$ Inch Pelvic Bone of 265 Egg Cock Bird.

the matter of condition into consideration, or rather it is better not to lay down rules in the matter as it is very hard to keep the egg type birds in good condition. But I try to keep my cock birds in good flesh, and not over one finger out of condition at any time. There are times before the male birds are a year old and while their bones are soft, that their abdomens will contract and expand, it depending on whether they are stinted in their feed or whether they are fed liberally. Egg type cockerels selected for breeders should have the best care and feed (see chapter on selecting cockerels for breeding). In examining the male birds for prepotency, the reader should select them with the greatest care. I cannot impress this on the reader too strongly. They should be as good or better if possible than No. 1, plate 35, and do not forget that the thumb nail on the left hand and the nail on the forefinger of the right hand (reverse the order if left handed) must be somewhat longer than the flesh, if you expect to take correct measurements.



Figure 48.—Showing 1-16 Pelvic Bone of 280 Egg Type Hen.



Figure 49.—Showing Six Fingers Depth of Abdomen of 280 Egg Type Hen.

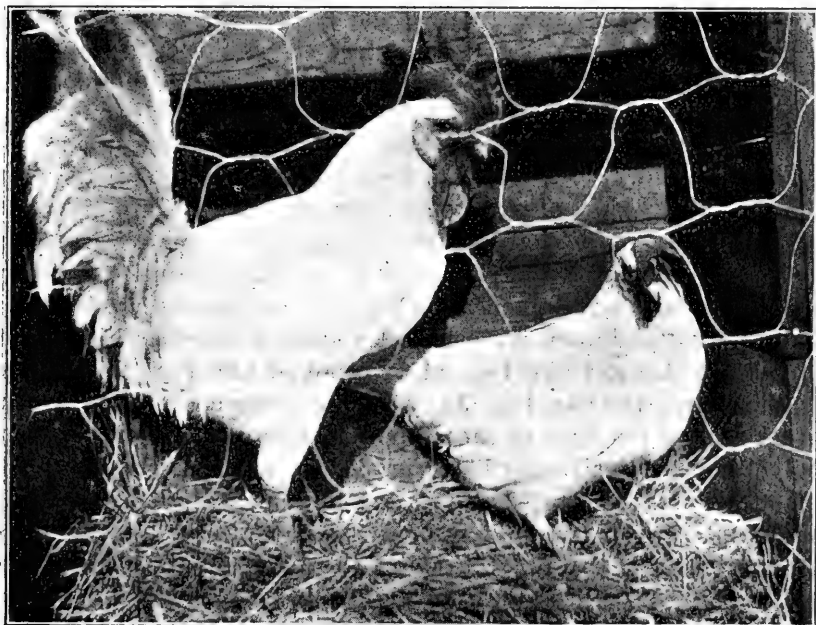


Figure 50.—280 Egg Type Hen and 265 Egg Type Cock Bird. Tail of Cock is Somewhat Cramped for Want of room.

CHAPTER XII.

SELECTING THE COCKERELS AT BROILER AGE.

I have tried to impress on the reader the importance of the careful selection of the male birds, and perhaps he is fully alive to the value of doing so. He starts out at the first opportunity and visits all the poultry plants far and near, with the determination to purchase the best male bird he can find. Before starting out he decides he will have nothing less than 200 egg type. Imagine his disappointment, when after handling perhaps fifty or more he can find nothing that will come any way near the 200 egg type, while if he examined the same number of hens he will very likely find at least one or perhaps more that will come somewhat near what he is looking for. Then he will say that there is no such bird as the chart describes as a 200 egg type cock bird. I wish to say here that I think I have at least fifty male birds, at the present writing, that will scale from 200 up according to the charts. I have over a dozen that will scale from 250 to 265, and these have all been developed within six years, from hens with three fingers abdomen and one-fourth inch pelvic bone, mated to cockerels with one and one-half finger abdomen, one-sixteenth inch pelvic bone.

The first season in California we raised about 300 cockerels up to three months of age, which is within the broiler age for this section. We arranged our house and catching coop as in Figs. 1 and 2, and went through the same movements that we do when testing the hens, except that we do not have to use all the tests on each one of the cockerels that we use on the hens. We hold the cockerels as in Figs. 5 and 6, and lay our hand on his abdomen as in Fig. 7. As soon as we lay our hand on his abdomen we can feel instantly whether his pelvic bones are straight like Fig. 34 or crooked like Fig. 33. If his pelvic bones are like Fig. 33, we have no use for him as a breeder, and put him in the shipping crate for market. If his pelvic bones are straight like Fig. 34, we measure the depth of his abdomen. If it is less than two fingers, we put him in the shipping crate. If two fingers or over, we examine him for prepotency, and if the projection on the back of his head as in No. 1 plate 35, is less than an eighth of an inch behind a line drawn at right angles from the back of the ear, (see Fig. 41 and

42), we put him in the shipping crate no matter how good he is in other points. We take no chances with him because **if we have made no mistake in measuring his head lines, abdomen and pelvic bones**, it will be a waste of time to breed from him; but if his head measures up good, we keep him as a prospective breeder. We say as a prospective breeder, as it is very evident it will not pay to raise all the cockerels to maturity.

Here in Petaluma where there are over 600,000 cockerels raised to broiler age in a season, it would be impossible to raise them all and test their breeding qualities. Neither is it necessary. If a person has a **delicate touch the comparative value of chicks for prepotency** can be judged as well when they are **three days old** as at any time later. Then again we are obliged to keep our chicks until we can distinguish the males from the females, and as a rule we will lose nothing if we keep them until they are at least ten weeks old, when if they have had the right care and feed they will be old enough to test. If their pelvic bones are thick at this age it indicates they are more or less of the meat type. If their pelvic bones are crooked it indicates that they never will be straight, and if they lack prepotency it indicates that they will always lack it, for they come out of the shell with this organ relatively large or small, just as a baby is born with a nose on its face.

I want to impress on the reader the importance of using the utmost care in measuring the head for prepotency, as it is **very easy** for a person to think he has measured the head right, when he has not done so. Especially if he has self esteem large he then thinks everything he does must be right. It would be impossible for him to do anything otherwise, than the right way. In my classes I have found workers in the machinist trade to make the most correct measurements, especially if they had the faculty of human nature large. While I have found professional men who had human nature small, to make the poorest measurements. This was owing to prejudice and not to the absence of the combination of the necessary mental faculties. I suppose there will always be found those who will discredit the most obvious fact, if it puts them at a disadvantage from a mental, moral, or financial point of view, but in this case it would be cutting off your nose to spite your face to be careless in any of these tests.

I have never yet in my investigations of hundreds of poultry plants found a degenerate lot of poultry, but that they were **small in prepotency**. But to return to the cockerels, as we said on page 169 we raised 300 cockerels the first year I was in California. After testing them at three months old as described, I found 18 that I considered worth keeping to the age of 9 months, when I would give them the final test. When they were 8 months old I tested them again, and while I found that they all had good depth of abdomen and good prepotency, that six of them had crooked pelvic bones. The pelvic bones on twelve of the cockerels had continued to grow straight, while the pelvic bones on six of them had grown crooked and were coming together at the points like the horns on a Jersey cow. I had to discard these six as breeders and send them to market.

The reader will see that **out of 300 cockerels I had only 12 that were capable of improving my flock.** Last year (1912) out of about 1200 I had only 200 that I considered good enough to keep for breeders, and while all my birds have been more or less squirell tailed, one of last year's 200 is a very well formed low tailed bird. But he lacks the pure white ear lobes. He scores 250 egg type and I have refused fifty dollars for him. I am going to see if I can breed a low tailed type of Leghorn in quantities that will conform to the present American Standard and average about 200 eggs per year in large flocks. The reader will understand that the parents of these cockerels were selected with the greatest care as to capacity, type and prepotency. **Type and Prepotency** are more or less hereditary traits or features distinguishable in the subjects, if we have the knowledge necessary to discern them. **But the individual inherent or innate potentiality** of any one or of each bird cannot be increased or diminished by the breeder. That is to say,, feed and environment will not materially change the **impotent** bird into a **potent** bird, neither will it change the typical **meat** type into the **egg** type bird.

But (I hear some sarcastic reader say) we certainly can diminish or increase their prepotency by alternately starving and feeding them well. That is begging the question. You could affect their fecundity very readily, but what the writer wishes to impress on the reader is that while **type** and **prepotency** are fixed before birth, and also the **ability** to govern capacity, and while **type** and **prepotency** can be procured **only**

by selection, capacity can be governed more or less by environment, in other words, feed, care, the right kind of houses,, ground, etc. We will say, for instance, the reader has a pen of egg type birds, both male and female, with large prepotency and capacity; and suppose they were all 200 egg birds. There would be no difficulty in raising chickens from them with the same degree of type and prepotency; but if he should stint them in feed of the proper kind and quantity while growing, they would lose in capacity each generation. I develop the capacity of both pullets and cockerels from the time they are three days old to the fullest extent by the most liberal feeding, care, and surrounding conditions. In concluding this chapter, I would say that the bird with the desired characteristics is more or less of a sport; and the value of the "Hogan Test" lies in the fact that with this knowledge you can discover the sport and perpetuate it through intelligent breeding. Again I want to say here that my best cockerels measure four fingers abdomen at three months old. All my stock is developed as much as possible at this age and I try to prevent the cockerels from shrinking. But the pullets will develop until some of them are six fingers abdomen. The enclosed article from the Petaluma Weekly Poultry Journal emphasizes what we have said in regard to the feeding and care of young stock. These cockerels were not crammed, or penned up and fed, but were taken off free range and sent directly to market. I wish to remind the reader here that in examining the cockerels for prepotency he may be proficient enough in the matter to examine them by holding them between his knees and not be obliged to put each one in a sack. The article follows:

Walter Hogan Can Raise Chickens.

Walter Hogan backs up his system of selecting the good layers from among the poor ones, but he has never made much fuss about his ability as a poultry raiser. For that reason some people have absorbed the idea that he is more of a theorist than a practical man. But he now has a flock of his own, and evidently he is making good, for he is getting results that will convince any one from Missouri or anywhere else who must be "shown" before believing. For instance, last week there was a spell of most discouraging depression in the prices which dealers were willing to pay for young poultry. There were

large arrivals of eastern poultry in San Francisco besides heavy receipts of California, and nobody wanted any more. Just the same, Mr. Hogan received \$4 a dozen for sixteen dozen cockerels just three months old, when the same dealer was paying but \$1.50 for birds of the same age. Now, what do you think of that? And Mr. Hogan says these cockerels were not descendants of the beef type of hens, but were hatched from eggs laid by hens selected as the egg type. They were not especially fed or in any way prepared for market. They cost 22 cents each for feed, and thus the profit on the bunch was \$21.76.

In speaking of this matter Mr. Hogan made the point that if all poultrymen would pay especial attention to producing fine broilers for market—that is in preparing the broilers that they are obliged to produce in order to have a corresponding number of pullets—they would benefit themselves greatly. Not only would they get a better price for the birds, but they would greatly increase the demand, as many people who now care nothing for the common dry-meated birds would become pleased consumers of the improved broilers. The Poultry Journal man knows by personal experience that the broilers turned out by Mr. Hogan are simply delicious when properly cooked, and far ahead of the ordinary article.

CHAPTER XIII.

SELECTING THE SETTING HEN.

“How can I select the best hen for the purpose when I want to hatch chickens with hens?”

The writer is asked the above question very often. It is a serious matter with a poultryman when he has a small number of choice eggs he wishes to hatch and gives them to a hen that is apparently setting well only to have her spoil most of them. He very naturally lays the cause to mites, or lice, or both. While it is true that the nests and surroundings must be kept free from mites, and the hens kept clean from hen lice, the trouble is not all here by a good deal. Sometimes a great deal of the fault lies in the hen. Some are born layers, some are born mothers, and some are born too lazy to get off of the nest at the call of nature. The hen born a typical egg type is of no use as a setter; neither is the hen that is born a typical meat

type, she is too lazy to care for her chicks, even if she is fortunate enough to hatch any and not kill them all by standing on them. She is too stupid any way, and the typical egg type hen is too nervous, and has no time to attend to them. She thinks of nothing but manufacturing eggs. So we will have to look for a hen between the above types which we have in the **dual purpose type**, with the following characteristics:

First, she must have **prepotency large**: that gives her the mother instinct. Next, she should be in normal condition as **indicated by her breast bone**; that is self evident, for a hen out of condition lacks more or less of the animal magnetism that is an aid to successful incubation. I need not mention good health as indicated by good red comb and wattles as every one knows that. The hen should be four fingers abdomen since anything heavier is more or less liable to break the eggs and anything less than that would not be large enough to cover sufficient eggs. If the hen is a three fingered abdomen, her pelvic bones should be about seven-sixteenths or one-half an inch thick. If she is a four finger abdomen hen, her pelvic bones should be about one-half inch or nine-sixteenth thick. If you can find hens such as described here, you will have hens with the mother's instinct. They will not be too lazy to take proper care of themselves and their chicks nor will they want to lay so soon as to neglect their chickens. The nearer you can get to procuring the above type of hens, the better success you will have raising chicks with them.

CHAPTER XIV.

SELECTING THE STOCK FOR RAISING BROILERS.

A great many of my friends have requested me to write a chapter on how to raise broilers, but as there are so many excellent books on the market that describe the process of the feeding, caring for and raising of broilers a great deal better than I could do it, I will confine myself to the selection of the breeding stock only. The writer has raised Light Brahmas and White Plymouth Rocks for years and has experimented with them to get the greatest amount of meat from the smallest amount of feed: to get the greatest weight of meat at three months old in the White Rocks, and the greatest weight of

meat in the Light Brahmas at maturity. In the process I have run up against two distinct propositions: one was a success from a commercial point of view, and the other, while not a financial success, was a success from an epicurean point of view. I will describe the financial proposition first.

We will select a pen of hens from our favorite breed, or from Wyandottes, Orpingtons, Plymouth Rocks, or R. I. Reds. The hens **must have large prepotency**: they must be six or seven fingers abdomen, and their pelvic bones should be 5-8 of an inch thick, in good condition. Now you have hens that will lay 12 dozen eggs their first laying year, and they are a paying proposition. Do not breed from them the first year, but wait until they are over one year old. Then mate them with a mature cockerel or young cock with **large prepotency** with abdomen four fingers deep or more, and pelvic bones from one inch, to one and one-fourth inches thick. You should feed the pen for eggs, and keep them as healthy as possible. If they are fed right, you will get lots of eggs, and good healthy chicks capable of laying on flesh rapidly and fattening very easily. As a **paying proposition** for market broilers I have never found any combination that would equal it.

But for my private use without regard to profit I would take the same combination as the above **except** that the **pelvic bones** of the hens would be **one inch thick**, instead of about 5-8. This would give a broiler that would put on flesh much faster, consequently it would be more tender. I have raised broilers, the flesh of which would melt in your mouth. I have a few secrets in the raising of them that I have never divulged but may do so in a few years.

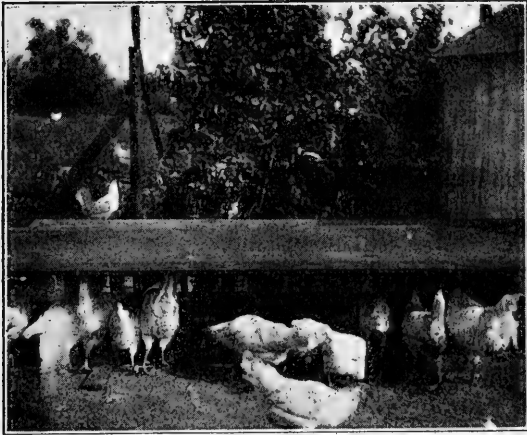


Figure 51.—The Dry Mash Hopper We Use. Closed.

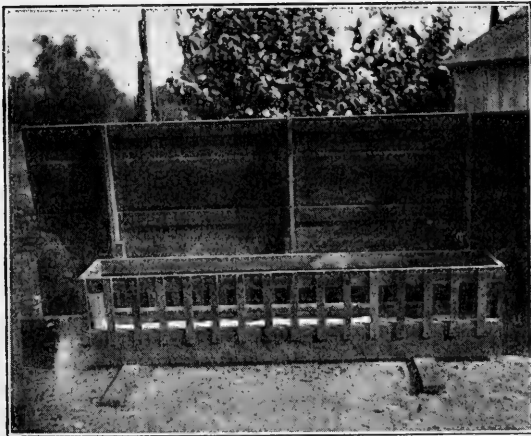


Figure 52.—The Dry Mash Hopper We Use. Open.

CHAPTER XV.

USING THE HOGAN TEST IN JUDGING POULTRY AT
THE POULTRY SHOWS.

From the Live Stock Tribune, Los Angeles, California.
(Now Pacific Poultrycraft.)

INGLEWOOD POULTRY SHOW.

A poultry show will be held in the Inglewood Poultry Colony on March 13th and 14th. This show will be the first of its kind ever given in the United States. All poultry shows that have been held in this country heretofore have awarded prizes according to the color, markings, and shape of the fowls only. The show at Inglewood will be unusual in that prizes will be awarded irrespective of the color, variety, shape, size or age of the fowls in competition.

Birds in competition will be judged as to their egg-laying capacity and reproductive ability only. The judging will be done by the system discovered and perfected by Walter Hogan, and now used in practical poultry raising by the members of the Inglewood Poultry Colony.

First, second, third, fourth and fifth prizes will be awarded to the best males and females entered from Inglewood. First prize being \$5 cash, second prize being \$3 cash, all winners receiving ribbons. In addition to the foregoing will be the Jaffa Grand Prize of \$25 gold, which will be awarded to the hen in the show which shows the greatest capacity as a layer combined with the ability to reproduce her kind.

Entries for the regular prizes will be limited to fowls from Inglewood, but competition for the "Jaffa Grand Prize" will be open to all comers. Entries from poultry raisers outside of Inglewood will be limited to two birds each. No entry fee will be charged, but all birds entered will be sent at the owner's risk as is usual at all shows.

The birds entered will be cared for, and reshipped to the owners by White Wyandotte Farm, under whose auspices the show will be given, and to whom all entries should be sent. No entries will be received after ten o'clock a. m. on March 12th.

This show will be unique in that it will present the com-

mercial side of the poultry industry, to the exclusion of fancy breeding. Every step in the poultry business from the hatching of the chick to the preparation of the mature fowl for market, and the packing of the eggs for table use will be illustrated by actual demonstrations on the famous White Wyandotte Farm where the exhibition will be given. Incubators will hatch not less than 2000 chicks during the show, and chickens in every stage of development, from one day old to ten weeks old, will be shown as raised in the best brooders with the best care.

There will be demonstrations on both days of the show of killing, picking and preparing fowls for market, as well as of packing fancy eggs. The best and latest in poultry supplies, fittings and equipment will be shown as actually used by the capable, successful men who are in the business for revenue only.

No admission fee will be charged, the show being given for the purpose of exploiting and demonstrating the poultry business as it is being developed in Southern California.

The "Jaffa Grand Prize" is given and named in honor of Professor Jaffa, of the University of California, who was the first man in public life in this state to test and verify the excellence of the system discovered by Mr. Hogan.

Transportation from Los Angeles to Inglewood will be free, and it is understood that the Board of Trade of Inglewood will make arrangements to take those who visit the show around the city of Inglewood in automobiles.

Those who visit the Inglewood Poultry Show will see an exhibition that will be more interesting by far than any show that has preceded it in California, or in any other state, because one will have an opportunity to see, not the pedigree, but the money, in the chicken, and a practical way to get that money out.

IVX SEEN AT

YERKES HALL, NEW YORK

In judging the poultry show at Inglewood the management made the rule that all birds were to be judged according to the condition they were in at the time they were judged. And while this rule may be all right in judging the fancy bird and the beef type bird, it will never do for the egg type bird as the reader will see when I relate an incident that occurred during the show in Inglewood, which was held in March. A gentleman had entered a White Leghorn hen that he had trap-

nested a year up to the previous November, and had her record with him. The hen scored (as near as I can remember) two fingers abdomen, two fingers out of condition, and 3-16 pelvic bone, and according to the rules of the show I was obliged to give her credit for 78 eggs her first laying year, when according to his trap nested record she had laid 180 eggs. He said she had been sick and had just commenced to improve shortly before he sent her to the show, and he wanted to prove whether or not I could tell how many eggs she **had laid** her first laying year. I told him I could not tell how many eggs she **had laid** but I could tell how many she **could have laid** if she had been fed and cared for right, barring accidents and sickness. That her capacity was 190 eggs her first laying year. He then showed me her record which was 180 eggs.

In the autumn of 1911 George D. Holden, ex-president of the American Poultry Association judged the fancy, and the writer judged the utility birds at the Pajaro Valley Poultry show held at Watsonville, Santa Cruz county, Calif. In judging that show full credit was given each bird **both male and female**, as to what they were capable of doing, whether in meat or eggs, and for prepotency, without any regard as to how their owners cared for them. Or in other words without regard to their condition. And the owners of the birds who were interested in knowing were instructed how to rectify any deficiency there may have been in the birds. It seems to me this is the best way to encourage and develop the poultry industry. I am **sure** the American Poultry Association could formulate a code of rules that would greatly aid in judging utility poultry, and thereby add greatly to the interest of our poultry shows. In fact I am advised that such a proposition is being considered at the time I am writing this, July 25th, 1913.

CHAPTER XVI.

STAMINA IN POULTRY.

When I came to California and told the poultry raisers that I was going to take their birds and in the course of time breed a flock of 200 egg hens from them, they declared it **could not be done**. They said if it was possible to breed up a large flock of 200 egg hens, their progeny would be so weak I could never raise them and that their eggs would be so misshapen, and thin shelled they would not be marketable. I replied that perhaps they were right but I saw no reason why I

could not do so here, as I had bred up one lot in the eastern states and another lot in Minnesota. Both lots were Leghorns and I thought it would be easier to develop Leghorns in California than in Minnesota, and I have now demonstrated in California that the following can be done: First, the 200 egg hen is a fact and not a theory. Second, that she can be **bred and fed** to lay as perfect an egg as any other class of hens. Third, that her eggs are as fertile and will hatch as strong chicks as the hen that does not pay for her feed. The breeder need not take my word for the above statements. The Frontispiece shows five of this type of birds that the writer bred and raised in California. These birds laid the greatest weight of eggs (131 pens of five birds to each pen competing, including three pens of Indian runner ducks) in the National Egg Laying Contest at the State poultry experiment station, Mountain Grove, Missouri, U. S. A., for the 12 months ending November 1st, 1912. These five hens laid 131 lbs. of eggs which reduced to No. 1 eggs as rated in Petaluma would be 229 3-5 eggs for each hen. The eggs these five hens laid **while moulting** were put on exhibition in the Chamber of Commerce in Petaluma and were pronounced by good judges to be as fine a lot of eggs as they ever saw, and that is saying a great deal, as there are more eggs produced within a radius of ten miles from Petaluma than in any other like part of the world. We have hundreds of letters from our customers testifying to the value of this stock, a few extracts of which we will introduce here, to prove to the reader that because a flock of hens are great layers it does not follow that they are of low vitality.

EXTRACTS FROM LETTERS.

Portland, Ore., 5-23-1912

"Received eggs. None broken. Very nice. **Fifteen infertile out of 150.**"

C. F. Perkins.

Lihue, Hawaii, 6-11-'13.

Eggs arrived O. K. None damaged. Have 14 chicks four weeks old doing fine. Am well pleased."

E. H. Broadbent.

(These eggs were shipped over twenty-two hundred miles by rail and steamer to reach their destination.)

"Watsonville, Calif., 4-21-12.—Eggs received. Finest we ever had. Got 49 fine strong chicks from 64 eggs."

Ora L. Hill.

Vancouver, British Columbia, 5-13-12..

"The 100 eggs received. Express and customs ran price to \$14.00. Am very well satisfied. Hatched 70 per cent beautiful chicks, doing well."

G. W. McLelland.

Quincy, Washington, 4-14-12,

"Chicks received; not a dead one in the bunch, which speaks well for the vitality of your stock."

H. L. Johnson, Treasurer and Manager, Quincy Lumber and Grain Co.

Victoria, British Columbia, 4-19-13. Sub. P. O. No. 1.

"Received the 100 chicks four dead. Think that is very good coming that journey."

James D. West.

Salem, Oregon, 4-19-13.

"Received baby chicks. They are just lovely; not one dead, which we think is great. They came in fine shape."

Mr. and Mrs. Hayre.

Seattle, Washington, 8-25-12.

"Received the fourteen hundred chicks about ten weeks ago. There were five dead in the boxes. Have lost about seventy-five of them all told."

S. K. Suttles.

Tucson, Arizona, 2-17-13.

"Received chicks in good condition, one dead, six hundred and twenty-three alive and kicking."

L. E. Smith.

Reno, Nevada, 3-11-13.

"Chicks came through fine, one dead in seven hundred, which speaks well for their vitality. They surely are a spry bunch."

A. L. Rice.

Reno, Nevada, 7-22-13.

"Chicks are fine." They are the largest and best looking ever seen in Nevada. They are just four months and twelve days old. One of them laid yesterday. Every poultryman that sees them remarks it's too bad I haven't a thousand."

A. L. Rice.

The above extracts are taken from a few of the many unsolicited letters I have received from my customers during the last two years that I have been selling hatching eggs and day old chicks. I have repeatedly shipped hatching eggs to the Hawaiian Islands and as far east as Minnesota: and day old chicks where they would be over 72 hours on the road. Last season I turned down over six thousand dollars worth of orders that I could not fill at \$10 per 100 for eggs and \$15.00 per 100 for day old chicks. I am aware I will have a hard time convincing some of my readers that what I claim for the 200 egg hen is true, but it seems to me any progressive poultryman would be satisfied with the proof I offer him. I will admit that the eggs and chicks from the 200 egg type hens as now bred are not all we would desire, but that is owing to lack of proper knowledge of breeding. As I have said before, by using the "Hogan Test" the reader can breed as fine or as coarse as his conditions require; and by selecting only those birds with large prepotency he will be assured of success.

CHAPTER XVII.

"AT SEA OVER MATING."

What shall it be; **The Trap Nest**, Mendelism or the Hogan Test?

From *The North American*, Philadelphia, Pa., Nov. 24, 1912.

"At Sea Over Mating."

America has some good layers, unheard of and unknown, 'tis true, but we are evidently all at sea in the matter of mating for egg production.

Can it be possible that Mendel's law obtains in egg production, just as it does in feathers and form? Do we eliminate, according to Mendel, the factor governing certain things in egg production, just as we do in the attempt to control coloring in birds, fowls, animals and flowers? If a son of a heavy-laying female is mated to a non-layer and this son does not carry the

excess of laying proclivity, do we get poor layers or good layers? If a 100 per cent producing hen (200 eggs or more) is mated to the son of a 100 per cent producing female, it does not follow, if Mendel's law applies, that the mate to the second 100 per cent female inherited egg-laying proclivities; therefore, why should the offspring of the second mating be prolific egg producers? And how far back must we go to get the excess of female inclination to reproduction?

Predominance of inclination exists somewhere in some tangible form, but we do not seem to be able to find it under our present system. That we will is conclusive, but we must do so quickly, in order to offset the growing increase of food-stuffs.

The trap nest identifies and gives you the number of eggs a hen lays, and is absolutely necessary if we wish to line breed or raise pedigreed stock. The writer has studied Mendelism since the spring of 1910, as he has, numerous other scientific works in the endeavor to find something that would be of aid in getting out this work. I must confess that the title, "The Call of the Hen," was suggested while on a visit with Comrade Jack London, and that is all I have been able to find that has aided me in this case. Mendelism may be found an aid along the line of feathers, but I doubt if there is anything in it that will aid the poultryman in the selection of breeders for type, stamina, and the production of eggs, or meat. It may be that, having eyes I fail to see it. Even if there should be anything of value in Mendelism, it would take two or more years to get it out, while the Hogan Test indicates the value of a bird in a few minutes, at most. It looks to me as if the poultrymen will have to look to the trap nest, and the Hogan Test to develop and maintain the high scoring meat and egg producing hen. The best pullets can be selected at maturity by the Hogan Test, and then trapnested when the poultryman is breeding pedigreed stock: while the cull pullets, lacking in prepotency and other points, can be kept as market egg producers. In this way it will be necessary to trap nest only the cream of the flock, and thereby save an immense amount of labor. The cockerels can also be selected at three months of age, and the most promising saved from slaughter. By this method poultry breeding will be reduced to a science, and become a pleasure where now it is a brain racking proposition.

CHAPTER XVIII.

HOW CAN I TELL A LAYING HEN?

I am asked this question very often and in reply would say from a **Scientific** point of view it is impossible to tell the laying hen, except with the X-ray. I was at a place in San Francisco lately where this subject was brought up. There was a small party present, all of whom had my System. One of the party worked in a large meat market where they bought and dressed live poultry. He said that occasionally he dressed a hen that showed no indications of being a laying hen, but upon being opened an egg would be found in her. I told him the hens that he had described were those that laid a very few eggs, and laid them only in the **spring**. Their pelvic bones expanded only while the hen was being delivered of the egg. This hen has **practically** but one egg under process of development at a time, consequently her abdomen does not have to expand to make room for only one egg. Whereas the hen that lays 150 eggs per year has a number of eggs developing at the same time, and her abdomen expands in proportion to her needs. The 200 egg hen has a still larger number of eggs developing, and she requires more room for them, hence her abdomen expands in proportion. The 250 egg hen has a still larger number of eggs of all sizes developing and her abdomen expands still wider than the 200 egg hen. When the hen's abdomen expands her pelvic bones, being literally a part of and continuation of her abdomen, must expand and contract with it. When she is through laying for the season her abdomen contracts both in width and depth and the pelvic bones must come closer together, which they do, although there are exceptions to this rule. We will take the 145 egg hen, for example, of the sanguine temperament. She will be four fingers abdomen 3-8 pelvic bone, when in normal condition, with pelvic bones of good shape. We draw our hand along her breast bone (keel) from front to rear and find her abdomen does not drop down the least bit below the rear of her breast bone. This hen we might call a normal hen. Her pelvic bones will in all probability expand and contract in conformance with her condition of laying; if she was in the flush of laying her pelvic bones may be about one and three-fourths inches apart: later in the season, when she is not laying so frequently, her pelvic bones may close to

about one and a half inches; and when she stops laying for the season her pelvic bones may close to about one and one-fourth inches. This will very likely be repeated each year.

Now we will select a hen of the 250 egg type. We draw our hand along her keel, as with the last hen; we find she is all right, close built and firm; we drop her and take another 250 egg type hen. In drawing our hand along her keel (breast bone) we find a slight bagging down in the rear. The abdomen seems to drop below the rear of the breast bone slightly. We will say this is a pullet, perhaps six or eight months old. She is well developed and you call her one of your best hens; you are proud of her and have decided to set every egg she lays. **Don't you do it.** This pullet should be put in a yard with others of her formation, after she is sixteen months old and trap nested. She may stop laying any time and never lay another egg, or she may continue to lay another year or so. In any case she has been such a continuous layer that her frame has become set to that form and her pelvic bones, as it were, set and will contract very little. They will indicate that she is laying when in fact she may not have laid for years. I have kept such hens until they were six years old, and some of them have never laid an egg after they were about 16 months still others after they were two years old. This is where a trap nest will save you money. When you select your hens by the charts 44 and 45 at 16, 28 and 40 months of age the ones that bag down the least bit should be put in a yard by themselves and trap nested to discover the ones whose ovaries have broken down and will lay no more. This is not difficult to discover as the hen that is over the 205 egg type lays more or less at all times during the first two years of her life, if not stimulated to over production her first year. 'A little learning is a dangerous thing', is an old saying applicable to this case. When a man says, "Dont Kill That Laying Hen," he should furnish you with an x-ray outfit that will enable you to comply with his request.

The writer has used the pelvic bone proposition for over forty years in selecting the laying hen and has found the following to be a very good method in selecting the hen that is not laying: The hen that scores 130 eggs her first laying year would measure about 7-8 of an inch between her pelvic bones after she stops laying for the season. The hen that scores 150

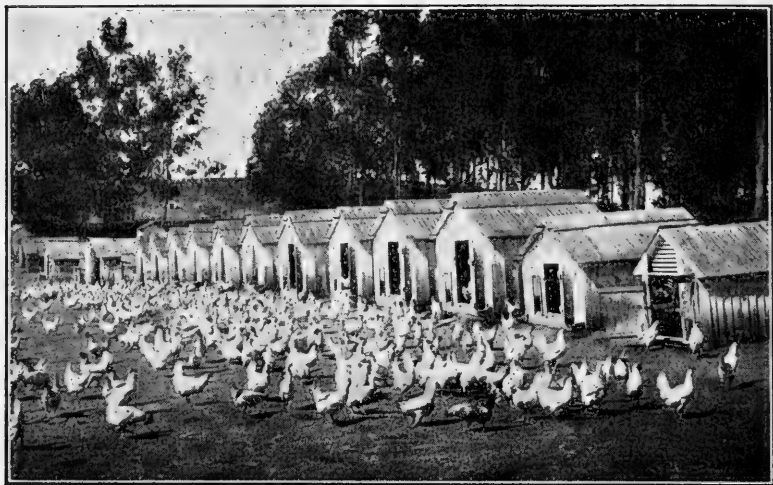
eggs her first laying year would measure about one inch between her pelvic bones after she stops laying for the season. The hen that scores 200 eggs would measure about one and one-fourth inches between the pelvic bones after she stops laying for the season. The hen that scores 250 eggs would measure about one and one-half inches between the pelvic bones after she stops laying for the season. The 250 egg hen does stop more or less after her second and sometimes after her first season, if not cared for right: but if feed and environment are right, she may continue to lay more or less until three years old, when her frame may become set. When she is done laying her pelvic bones may remain two inches apart. As hens grow older their pelvic bones become thicker during the winter months when they are not laying. The thickness varies according to their type, the typical egg type changing little or none, while the more pronounced the meat type becomes, the more the pelvic bone changes, owing to the increase or decrease of flesh on the abdomen (flank) of the fowl, as it takes on or loses flesh as indicated by her breast bone.

CHAPTER XIX.

This chapter contains "Walter Hogan's System" as the writer wrote it. I did not write "The Walter Hogan System of Increasing Egg Production by Selection and Breeding." I furnished the notes to a literary gentleman and he wrote it without strict regard to the text. But I admit that I wrote the "Call of the Hen" and as I claim no literary accomplishments the reader will no doubt discover the difference in the work. The 'Walter Hogan System' was sold under Promise of Secrecy which is declared null and void on the issuance of this book.

Petaluma, Calif., July 31, 1913.

Signed: WALTER HOGAN,



Showing the "colony system" of housing hens much used at Petaluma. This method is inexpensive but not advisable where the climate is either very hot in summer or very cold in winter.

WALTER HOGAN'S SYSTEM



WALTER HOGAN

The Originator of the Walter Hogan System

There are two ways of selection described in this document.

When hens are in flush of laying, selection by the pelvic bones alone is the easier way. But when not in flush of laying, the pelvic bones together with the abdomen will be found the most ready way. (See supplement next page.)

Please bear in mind that the hen with thin pelvic bones and large, soft abdomen is the heavy egg laying type.

The hen with thick pelvic bones and large fleshy, fatty abdomen is the large beef type.

The hen with medium, thick pelvic bones and large medium fleshy and medium fatty abdomen is the dual purpose type, and can be made to lay fairly well or made to produce flesh, it being a matter of how she is fed.

The hen with small abdomen is of small account, either as an egg or as a meat proposition, as she lacks the abdominal capacity to digest and assimilate food enough to sustain the every day wear of her system, and at the same time to produce eggs, or flesh, in paying quantities.

Everything related here applies to the male bird as well, only in a lesser degree.

The remarks in regards to pullets refer to mature pullets, as Leghorn pullets are at five months old in the New England states.

My birds in Massachusetts were bred for eggs only, for years, and their type became set and their pelvic bones contracted, when not laying, to average about 25 per cent, but I find that hens bred promiscuously contract about 50 per cent.

The points to be borne in mind in using this system are that selection by the pelvic bones alone is best made in the flush of laying.

That thin pelvic bones and soft abdomen indicate the egg type.

That thick pelvic bones and hard, fleshy, fatty abdomen indicates the beef type.

The size of the abdomen indicates the capacity of the bird, either as an egg or as a meat proposition as the case may be—large abdomen, large capacity; small abdomen, small capacity.

The same rules apply to the cockerel, cock, male bird or rooster, as he may be called.

In order to determine the capacity of a hen for egg production by one selection, she should be in normal condition and not more than a few days broody.

The estimates in this document refer to hens about one year old. As a rule they will lay less each year as they grow older—how much less depends on the vitality of the hen, other things considered.

SUPPLEMENT TO WALTER HOGAN'S SYSTEM.

If you will get a little one-foot rule to check yourself up while getting used to measuring with the tips of your fingers as in figure 4, you will have no trouble in applying its principles right. You can hold the bird feet up and head down between your knees while you are measuring; then hold as in figure 4 and learn to estimate the width right. Anything under one

inch will not pay, all over 1 1-2 inches will pay; from 1 to 1 3-8 are doubtful; 2 inches is about the 200-egg type, and 2 3-8 inches about the 250-egg type and 2 3-4 inches about the 280-egg type.

Hens measuring from 1 to 1 3-8 inches should be put in a yard while being fed well and looked over once a week at night in the dark for about eight weeks if you wish to make a careful test. Any that come up or down in measurement can be put in the good or bad yards as the case may be. Hens will go up or down about 25 per cent in measurements as they are in flush of laying or not. The best time to examine hens is after dark while on roost, which should be about 18 inches from the floor. Place left hand on back of hen, lift up tail with thumb of right hand and apply tips of fingers to pelvic bones. With a little practice you will be able to inspect 30 per minute. It is admitted by all Physicians, Professors and Students of Physiology that I have talked with in regard to this matter that the abdominal capacity of a hen together with a strong vital temperament has everything to do with her value as a laying proposition. The pelvic bones (being a continuation of the body structure of the fowl and subject to very small changes in the formation of flesh), are, when comparatively straight and thin, an index to the width of the abdomen and the best if not the only one we have, as they protrude from the body and may be easily measured. The depth of the abdomen can be taken by placing the palm of the hand crosswise below, between the pelvic bones and the rear of the breast bone. Sometimes it will be 1, 2, 3, 4, 5, or 6 fingers. (A finger means three-quarters of an inch). Also place fingers between pelvic bones and tail bone. Sometimes it will take 1, sometimes 2 fingers. In this way you can judge the size of the abdomen which with the pelvic development will be a rule as to a hen's value as a layer, except in rare cases of misplaced or diseased organs. Sometimes a hen will have a large abdomen but her pelvic bones will grow crooked and come almost together, like the horns of a Jersey cow and she will lay better than the distance apart of her pelvic bones will indicate but never will do as well as she should and should not be bred from. She wastes too much nervous force in laying. The farther you get away from the crow formation the better your hens will be.

As a rule fowls are almost twice as long coming to maturity in California as they are in the east and middle west states. What the reason is I suspect but do not know, but will find out in the next two years.

No document purporting to be a copy of Walter Hogan's System is genuine without my signature as is set hereunder: Wishing you the best of success, I am sincerely yours,

THE WALTER HOGAN SYSTEM OF INCREASING EGG PRODUCTION BY SELECTION AND BREEDING.

It has been estimated that to add one-half dozen eggs to the annual producing capacity of every hen in the United States, would result in additional returns from our poultry sufficient to pay the national debt within less than a year. Allowing this to be true, we are prepared to show that the method of selection and breeding herein outlined, is capable of paying off our great debt several times during a single year, without having to increase the number of hens kept a single bird, or the cost of keeping them a single dollar.

The method—or discovery, we might call it—has been tested by the writer in every conceivable way, regardless of expense, time or trouble, and has been found absolutely faultless in every particular. It has been submitted to one government Experiment Station (as will be shown later) with the same unerring results; and also to a number of the foremost poultrymen of America, who fully and without exception corroborate all that is claimed.

This, you will agree with us, means a revolution in economical egg production. It means, too, that no poultryman, however small his flock, can afford to go on in the old way a single year longer.

Every animal on the farm has a well defined mission all its own, outside of the general one of producing meat. The great mission of the cow is to produce milk, the sheep wool, and the mission of the hen is evidently and pre-eminently egg production. This being the case her value varies, or should vary, largely with her ability to produce eggs. And still it is a

well known fact that, while every farm animal has been selected and bred for the best there was in it along its own peculiar line, and all prizes have been awarded accordingly, the hen has been bred largely, and prizes awarded her almost wholly, for feather and markings, the judges seldom or never dreaming it important to know whether she was capable of laying at all or not.

The writer was amazed to find this state of things when, some years ago, he turned his attention from managing woolen mill interests to trying to manage a poultry yard. But, in spite of the fact that he was wholly unable to find bird or strain that were known to be exceptional egg producers, he succeeded within six years after starting, in building up a flock that averaged annually considerably over 200 eggs per hen.

Before deciding to publish this work I found, after diligent inquiry among the leading poultrymen of the United States and Canada, and some correspondence reaching to other countries, that there was no known method—other than the slow and costly one of trap nesting—of selecting birds of great egg producing capacity. Trap nesting, in addition to the faults mentioned, which make it almost impracticable for the farmer, had a still more serious one in the writer's judgment; it could not trap nest roosters, which I have found to be more than "half the flock." For this seemingly insurmountable difficulty I have found an easy solution, and can as readily identify the male as the female and as unerringly.

The facts of which this document treat are a discovery, a method, and a development, all in one. The happy inspiration and discovery came within a few hours; but it has reached this workable and absolutely reliable form by a costly analytical and experimental process extending through years. After the underlying principle had been found, it had to be tested and proved to my own satisfaction. Then the various objections and criticisms, which will occur to many readers, had to be answered or met by actual practical experiences.

The method enables one, First—to easily and without error, weed out all the worthless birds from a flock; those that do not lay at all, also that lay so little that it is a loss to keep them. This alone means millions to this country. Second—to separate just as unerringly all pullets before they begin to lay; indicating the coming great layers, the fair layers, the very poor,

and the barren. The latter will be found in nearly all flocks. Third—to tell those not liable to lay when disposing of old or other hens for the table or market, or for other reasons.

Beginning my investigation—as I was compelled to—with birds selected wholly without egg record, I was soon greatly impressed with the dissimilarity of formation of the pelvic bones and surrounding portions of the body, particularly of the former. Some I found nearly closed up, hard and unyielding; others barely admitting one finger between these points; while a very few would easily admit the ends of three fingers between the tips of the pelvic bones, and these were generally thin, tapering and elastic. With this clue I was not long in finding that my great layers were the latter and my barren and nearly barren ones, the first mentioned. My attention was next forcibly called to this by seeing a long row of dressed pullets and hens in a butchering establishment. Noticing the great difference in the formation I secured the privilege of numbering the hens and having the entrails, as they were removed, left by the



Cut No. 1.—A Leghorn Hen Showing This Development Has the Egg Laying Instinct at its Maximum

side of each bird. In every instance I found my suspicion verified; the indications of large numbers of eggs and ample machinery to go with them, with the wide pliable pelvic bones; and just the opposite condition with the narrow ones, the very least, or no egg indications whatever, with the bones very close



Cut No. 2.—This is a Hen of Medium Development. It is a Fair Layer.

together at the points and unyielding to pressure, hard, thick and rounded in. This experiment was tried again and again, with different breeds, but never with different results.

I was satisfied I was on the right trail now, and determined to spare neither time nor money to make sure I was right. For several years following these discoveries I spent much time and money visiting well known poultrymen and others, frequently paying as high as \$10 for best known layers only to kill them to prove or disprove my conclusions—to photograph the live bird, next her dressed body, then her skeleton. In every instance I found my theory correct. I divided my own flock according to my findings into three flocks, and the very first day's lay proved my theory beyond question, so far as one day could. I then divided other and many flocks; but wherever they were and whatever breed, without an exception the same result followed.

Skipping a number of years, I might say right here that in 1904, I divided the flock of Leghorns, Wyandottes and Plymouth Rocks at the Minnesota Experiment Station at Crookston, into three pens. First—the best; second—medium—to poor; third—very poor or barren. I was about twenty-five minutes doing this in the presence of Mr. C. S. Greene, at that time the manager whom nearly all the leading poultrymen know; and Mr. T. A. Hoverstad, then Superintendent of the station. These gentlemen then had absolutely no faith in the method! not knowing anything about it; but were assured by me that if the barren pen laid an egg, or either of the others



Cut No. 3.—Hens With this Development are of Little or No Value as Layers.

failed to perform as I indicated, they were at liberty to publish the method and me to the world as a fraud. The first day showed pen No. 1, 45 eggs; pen No. 2, 20 eggs; pen No 3, no eggs; and this continued with slight variations, the entire period of the experiment which lasted for weeks; though not a single egg appeared in the barren pen. The per cent of eggs to

the 100 hens for the entire time was: First pen, 60 per cent. per day; second pen, 37; third pen nothing. But for lack of room, I might give many more experiments and tests fully as startling as the above.

But to go on; within two years after selecting my first layers in this way, I had a flock, the larger part of which was



Cut No. 4.—Showing a Convenient Method of Holding Fowls When Testing Them.

laying 200 eggs and above per year, individual layers greatly exceeding this.

Then came another discovery, fully as important as the first. I noticed that, though I hatched all my pullets from the best layers' eggs, some of them were exceedingly poor layers, now and then one of them barren. I studied upon this for a long time; spent more money and killed many more birds. Then with another idea which, as suddenly as the first dawned upon me. I made for the slaughter house once more. I soon had a row of forty or so dressed male birds this time, laid out before me; and then at a glance I saw my long sought solution. There was the same great difference in the pelvic formation, found in the hens. I examined my roosters to find that half of them were absolutely worthless. Why do I say that the rooster "is MORE than half the flock?" Because later I found, as

many know, that the female offspring take largely after the father, and the male offspring after the mother. It is so with all animals, and almost always so in the human family. Had I used males of my own raising, I should have done better, but I had not. By the way, I found two high priced and "high scoring" birds used at the Crookston station in 1904, absolutely without value, and Mr. Greene now agrees with me fully that they were; although he was at the time quite indignant when I pronounced his costly beauties worthless.

I may say here that, while I found one very good exhibition bird in this experiment station flock that was wholly worthless as a layer, I am pleased indeed to be able to state that one bird which had taken several prizes for markings, etc., I found to be a priceless layer. I never saw but one bird that came anywhere near being that hen's equal; I found one, however, with very poor markings that outranked any hen but her.

From this time on, breeding hastened matters fully as much as selection, and I soon had, or rather—to be accurate—at the end of six years from my first start I had a FLOCK AVERAGING CLOSE AROUND 250 EGGS EACH PER YEAR; A FLOCK PAYING ME MORE 'THAN DOUBLE THE PROFIT MY FIRST FLOCK COULD. During the last few years of this period I again and again, for experimental purposes, mated excellent hens with narrow pelvic boned males and every time a crop of pullets that varied greatly in egg yield, was the result. Again and again I bred wide pelvic boned males with narrow boned females, with the same results. But wide pelvic boned males with hens of the same formation, (with the exception now and then at far apart intervals, a freak), brought excellent layers. Occasionally a male bird failed to transmit well; but this I afterwards found was only when it was wholly lacking in masculine qualities, as denoted by the width and depth of head and back of neck, with other indications common to masculinity in all other animals. From this time I began mating wide pelvic boned males with my widest hens a marked increase in the number of great layers was evident; in fact the third year it was the great exception to find anything but first-class layers among the pullets.

ITS ADVANTAGES.

The advantages of this method for one owning even a small flock of birds, are so apparent that space need not be given to discuss it. To one having a large flock it means, must mean, a small fortune in additional profit, with no more labor or investment. To those engaged in selling eggs for hatching it is bound to mean everything in the near future. It would be simply suicidal for a farmer, or anyone depending upon the eggs of his flock for the profit, to be so unbusinesslike as to buy eggs for hatching from untested flocks. We do not believe it would be possible to find one who would do so, after knowing from experiment stations and otherwise that the method is unailing.

Some of the advantages over trap nesting have been stated; perhaps the strongest being that we can not trap nest roosters. In addition I might call attention to the fact that trap nesting a single bird must extend over the entire year, to be at all accurate, and would take many times the amount of time it would require—by this method—to settle the laying possibilities of a thousand pullets. A little more time would settle the laying powers of a large mixed flock at mixed laying seasons; which might require two, or at least three examinations, a week or ten days apart.

Again, a worthless pullet can be found when she is from five to six months old, and fatted and sold, without having to keep her a full year in order to do it safely. Besides, handling hens almost always tends to disturb and discourage laying. Trap nesting will, if persistently followed the entire year, give nearly the exact individual record, which is not material to one egg man in a thousand. It can not be exact, however, as a shut in and otherwise disturbed hen never does her best.

This method applies to other birds as well; turkeys for instance. Last fall I bought two turkeys for experiment. One was SMALL with LARGE egg development; the other LARGE with SMALL egg development. The small bird has laid and hatched out two litters of fourteen each, the present season, and has at this date laid twenty-three eggs towards a third litter. The large one laid and hatched fourteen eggs early in the season, and has shown no signs of laying since; but has taken on much more flesh than the laying turkey. This would, in addition to indicating laying turkeys, also show what

to breed, if large birds only are desired—as would nearly always be the case with turkeys.

The absolute surety of never killing a bird for market or home consumption that is laying, about to begin laying, or is liable to lay in the near future, is another decided advantage over the trap nest; and one of the quickest available advantages of the system.

Again, the process requires no investment in patent nests, leg bands or other fixings, which amount—in trapnesting—to many times the first and only cost of this method. For accuracy in all the advantages claimed for this method, we will most gladly submit a test with the greatest expert trap nester that can be selected, if it can be so arranged that some high authority in poultry matters or some government experimental station shall have charge of it. This unconditional offer we make to the world.

HOW TO SELECT.

As the basic principle of this method of identifying capacity for egg production is the width and relative condition of the pelvic bones and surrounding construction, it is obvious that exact measurements can not be given unless a distinct breed be designated. A Cochin lays a large egg and is built accordingly. A Bantam lays a small egg and its pelvic development, in inches, is correspondingly smaller. It would be manifestly misleading to apply the same measurements to the two birds.

While the ability to make this allowance will come to the operator quickly—almost intuitively, after a very short experience—I have thought best to confine all my descriptions and measurements here, to one breed of fowls only,—the Leghorns, these being a medium sized, representative bird, well scattered over the entire country. It will be easy from the measurements to work up or down as the birds on hand may be larger or smaller. It is all a matter of comparison, and, all things being equal, the bird with the widest and most pliable pelvic bones, will be the greatest layer; while the one with very narrow, contracted pelvic formation will lay little, if at all. Behind the pelvic bones lies the egg machinery, and it will be found more abundant and roomy the wider the bones.

SELECTING PULLETS.

(Leghorns.)

Perhaps the best time to select layers for a flock is when the pullets are from four to six months old. If all are in a uniformly thrifty condition at this time, it is next to impossible to make a mistake. The best pullets at that age should show a width of about two inches, while the best matured laying hens should show a development of about two and one-eighth inches. See cut No. 1.)

Pullets of Plymouth Rocks and their class should be selected about a month later, and then show slightly larger; about two and one-eighth inches. The best Asiatic pullet about two and one-fourth at seven or eight months old; the Leghorns being earlier maturers. At the end of six years of careful selecting and breeding, I found my Leghorn pullets quite as wide and well matured at four months as my first ones were at five months.

Second class Leghorn pullets from five to seven months old will show a development of about one and five-eighths inches. (See Cut No. 2.)

At six months old, all Leghorn pullets showing only an inch or less pelvic development should be discarded regardless of feather or comb. They will never make layers. (See Cut No. 3.)

All things being equal, the earlier a pullet begins to lay, the better and longer will she lay.

SELECTING MATURE LAYERS.

The next best time to ascertain a hen's laying qualities is when the whole flock is in the flush of laying; in other words, when about all are at work. Those found then to measure about two and one-eighth inches are extremely good layers. Some flocks have very few of these priceless birds in them, while others have good numbers. From this class of layers, and above that measurement, and from these only, should eggs be saved for hatching.

Occasionally hens are found measuring as high as two and three-fourths inches. These hens with the best of care will lay as high as 280 eggs per year. Those measuring about two and three-eighths may be depended upon to go as high as 250.

The fact that this kind of hen can be found is ample proof that with proper selection they can be bred in large numbers.

Hens found at this time measuring from one and seven-eighths to two inches are real good layers, and should not be discarded if one wishes to build up an at all large flock; but they should not be bred from. Hens, in the flush of laying, measuring only one and one-fourth to one and one-half inches, are poor; and those showing from an inch down should be discarded regardless of shape or color.

A large enough flock of the first mentioned hens would make any poor man rich. The second kind would keep themselves and their owners going; while many of the last named class would make a rich man poor.

Poor layers kept well and fed a large variety of scraps and other foods, will sometimes make pretty fair egg records for a short time; and birds of the best quality, under exceptionally hard conditions, will make poor records. There are also occasional freaks in both extremes of measurements, but they are so infrequent as to not be at all important. Approximately, 280 egg hens that measure as high as two and five-eighths inches in the flush of laying, will show about three-eighths to one-half inch less when not laying, and this shrinkage in measurement, will apply to all other grades in about this proportion.

SELECTING FOR FALL MARKETING.

We do not like to kill birds about to begin laying, that are laying, or really good ones that are just through laying; particularly when there are plenty in the flock that do not come under any of these heads.

In this alone, the cost of this method, when once well understood, can be saved several times in a single season with a good sized flock of birds.

While the exceptionally good layers can be told readily and at almost any time, laying or not, and an absolutely worthless bird can be told the same way, there is a time, just when the real good layer is resting and the common to poor layer is doing her best, when they come—for a short time only—close together in pelvic appearance.

While it is not safe to kill a bird that measures one and one-eighth inches or over, it is possible for a very fair layer to

not be much wider than that at the close of laying out her litter. Some good layers, that in the flush of laying will measure one and three-quarters to two inches, at the close of their laying period will sometimes close up to about one and one-eighth inches. A very poor layer in the flush of her laying time, might be one and one fourth to one and one eighth inches, so care must be taken at this period not to confound the two conditions, which do not exist at any other time. This is referred to in the introduction. To wholly prevent this—when it is desired to save every at all good layer—it is well to make two, or possibly three examinations, a week or so apart. In this way there will be no danger of confounding the one about to begin laying, with the one about to quit; and the poor layer can be told from the good one.

When killing a whole flock at two or three years old, as many do, no hen measuring one and one-eighth inches and under is worth keeping; particularly is this true if the birds have been well fed and stimulated to about their full capacity. No hen of any value for egg production will have an egg in her at this time and measure so small unless she is a slow, infrequent layer at her best. Sometimes this kind of a hen with very small measurements will be found laying an occasional egg late in the season.

SELECTING ROOSTERS.

We have said how important it is to have males of the right formation, to mate with the great layers for breeding purposes. We need not emphasize this. It is so evident that we can not trap nest a rooster, and equally so that years of trap nesting hens can be ruinously upset in a day by crossing with an inferior male, that it would reflect upon our estimation of the reader's intelligence to say more about it.

I have found Leghorn roosters, that measured one and three-fourths inches, but they are rare and priceless. A good matured bird should measure one and one-eighth inches and a pretty fair one an inch. I would not use one that measured less if I could possibly help it. Many fine looking birds measure only one-half inch, but such ones will ruin the offspring of the best layers, and should be discarded whatever their qualifications in feather, tip of comb or anything else.

Now and then the objection reaches us that the high type roosters referred to can not be found. I have found them as

others have, and I believe there are nearly or quite as many in proportion as there are of the 250 and above hens; but we do not save all the roosters as we do all the pullets, and they are correspondingly scarce among mature males. By selecting always from large numbers of males before they are killed off, this objection will be largely and quickly overcome.

The fact that males of this class can be selected, is of itself a discovery sufficient to revolutionize the whole poultry business without the examination of a single hen—were time enough taken—but the two together bring absolute and immediate results.

In the hands of a slightly experienced or an at all competent person, the element of chance is entirely removed by this method of selecting layers and males; and one is just as sure of the results sought as that a hen will die if her head is cut off.

We ask but one thing; that judgment be withheld till this method be tried. If the tests are fairly conducted there can be no failure.

Crude infringements and imitations of this discovery and system—as of everything else of value that has cost years of investigation and experimenting—are liable to spring up, but the safety and economy of going direct to the fountain head need scarcely be suggested.

Dated November 20, 1904.

THE END.

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